

TERRY KEPNER'S

# portable 100

\$3.95/CAN \$4.95



**A CLOSER LOOK AT DOS**  
First aid for *FLOPPY*.



**TEXTSTAR**

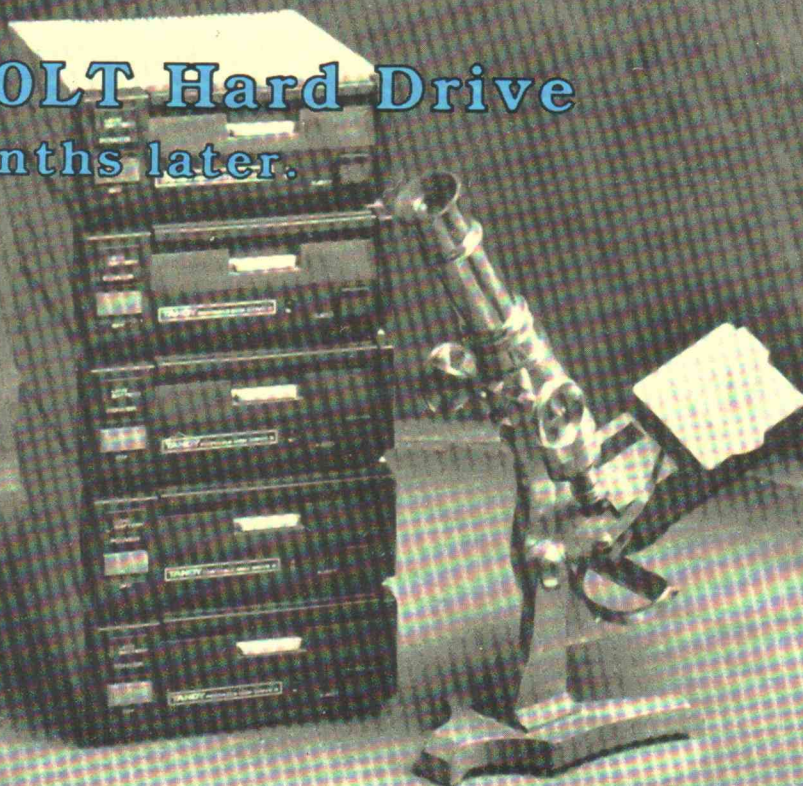
Wordstar cursor control.



**A 1400LT Hard Drive**  
Five months later.



**WEETAX**  
Software Review  
Be prepared  
for next year.



Free  
programs  
inside!



INTRODUCING

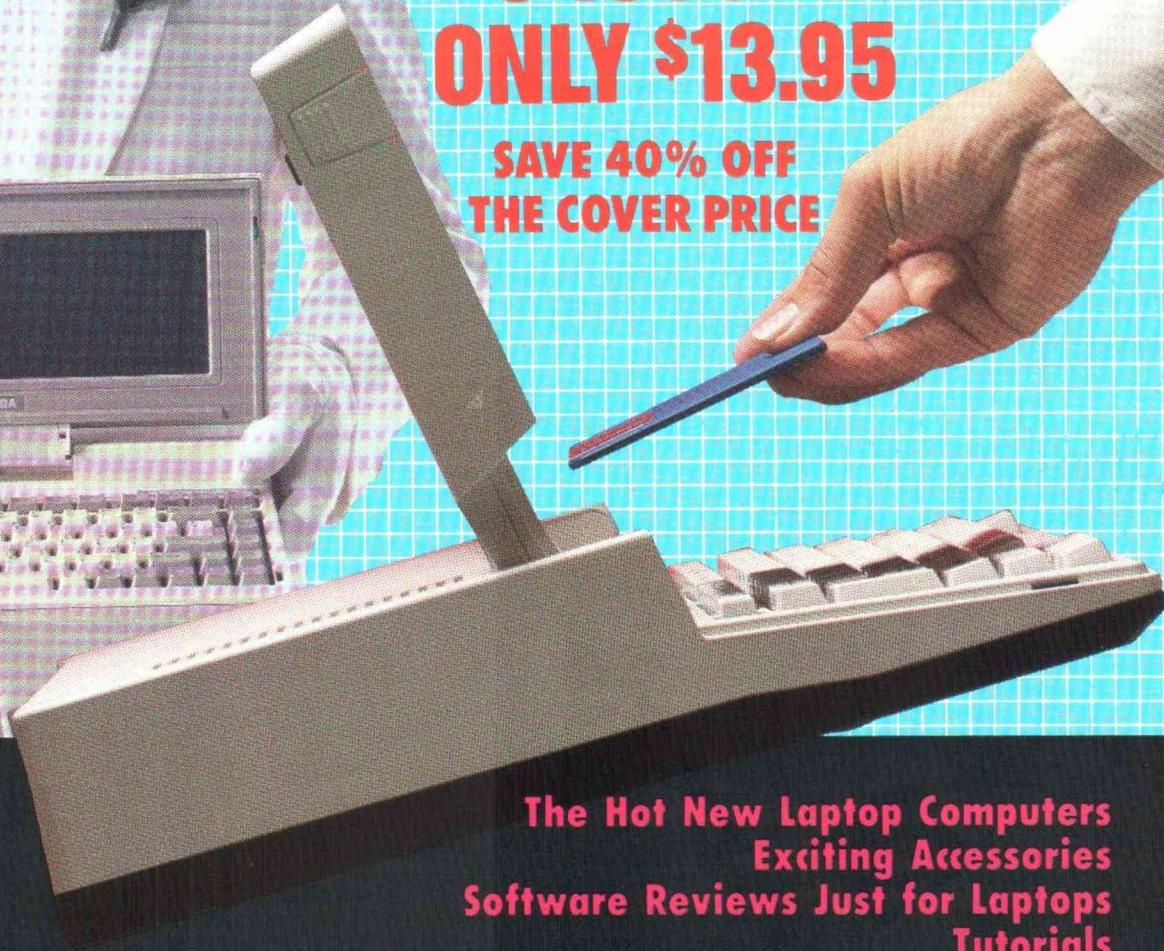
# PC Laptop

COMPUTERS MAGAZINE

**SPECIAL CHARTER  
SUBSCRIPTION RATES!**

**6 ISSUES  
ONLY \$13.95**

**SAVE 40% OFF  
THE COVER PRICE**



**The Hot New Laptop Computers  
Exciting Accessories  
Software Reviews Just for Laptops  
Tutorials  
News and Information  
All MS-DOS Hardware and Software**

**PC Laptop**  
COMPUTERS MAGAZINE

☐ SIGN ME UP FOR 6 ISSUES AT THE SPECIAL CHARTER SUBSCRIPTION OF ONLY \$13.95!

☐ PAYMENT ENCLOSED ☐ BILL ME ☐ CHARGE MY ☐ VISA ☐ MC

No. \_\_\_\_\_ EXP \_\_\_\_\_ SIGNATURE \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

**Money back on unused subscriptions if not completely satisfied.** Foreign add \$7. Make checks payable to LFP, INC., Your first issue will arrive in 6 to 8 weeks. Watch for it.

P.O. Box 16927,  
N. Hollywood, CA 01615

CJQXV



# ARTICLE INDEX!

With over 47 issues, and hundreds of articles, *Portable 100* is THE source for information, programs, and applications for your Tandy Portable Computer. But how do you find what you need among all those issues? The answer is the *Portable 100 Article Index*. Covering every issue from September 1983 to the combined July/August 1988 issue, the index is designed to make it simple for you to find what you need. And at a cost of only \$7.00 (postage and handling included), you should buy one today!

And what do you do when you find an article you want? Easy. First check the back issue chart below for back issue availability. If the issue is available, just order it using the handy order form in the index. If it isn't, don't despair. Photocopies of any article cost just \$1.75 each. Simply list the article, or articles, by title, author, and issue, enclose payment, and in just a short time you'll have the articles in hand.

## BACK ISSUES!

*New low collector edition prices!*

Month	83	84	85	86	87	88	89
January			NOT PUBLISHED				
February							
March			OUT		NOT PUBLISHED		
April		OUT					Not Available Yet
May		OUT					
June		OUT					
July		OUT		OUT		combined July/ August Issue	
August							
September	Premier Issue						
October		OUT		NOT PUBLISHED			
November							
December						OUT	

### BACK ISSUES!

We've decided to inaugurate the new year by reducing the price of our collector edition, pre-1987 back issues to only \$9.95 each, postage and handling included. The price of issues from August 1987 to present are \$5.00 each, postage and handling included.

To help you decide which issues you want, we have a special, comprehensive 18-page article index covering every issue published from September, 1983 (premier issue) to the July/August 1988 issue. This index is available for only \$7.00 (includes shipping & handling).

- ☐ Send me the Portable 100 Article Index for \$7.00 (P&H included).
- ☐ Please send me the back issues I've indicated above (pre-1987—\$9.95 each; 8/87-on—\$5.00 each; shipping and handling charges included).

#### PAYMENT MUST ACCOMPANY ORDER

- ☐ CHECK ENCLOSED    ☐ MC    ☐ VISA

Total enclosed: \_\_\_\_\_ CARD# \_\_\_\_\_ EXP. DATE \_\_\_\_\_  
Be sure to include entire card number

NAME \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

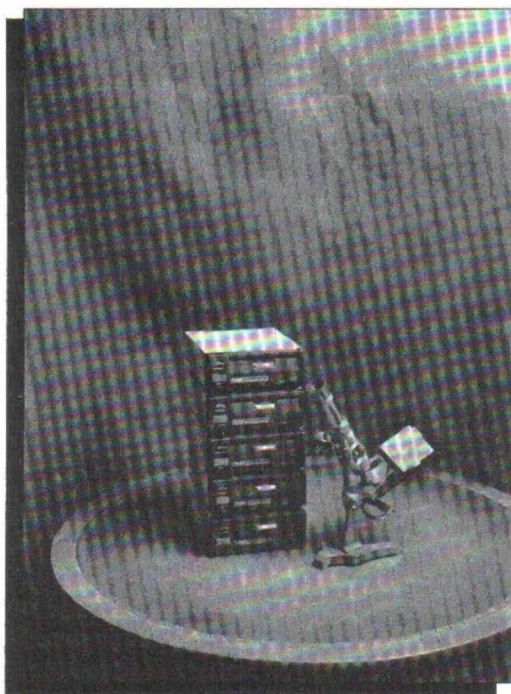
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

*Please allow six to eight weeks for delivery*



# ON THE COVER:

This month's disk patches should be the final word on how how to make FLOPPY friendly to other programs. Photo by Richard Brayshaw, concept by Mike Nugent.



VOL. 6, NO. 3  
March 1989



Tandy 102

## DOS PATCHES III

by Mike Nugent

*"Stitch" in these improved patches for the Tandy Portable Disk Drive 2.*

6

## TEXTSTAR

by Stan Wong

*Get Wordstar cursor control for TEXT.*

8



Tandy 200

## AUDIT 600

by Dennis C. Rogers

*How to manage your utility bills with the Tandy 600.*

14

## FIVE MONTHS WITH TWENTY MEGS

by Jim Berg

*Experience provides a compendium of useful tips for the 1400LT hard drive user.*

20



Tandy 600

## WEETAX

by Don Wood

*For year-end relief, try this weekly tax (record) collector.*

22

## DEPARTMENTS

ROM WITH A VIEW

3

I/O

4

NEW PRODUCTS

22

BASIC BITS

26

DEFUSR

29

THE CUSTOM 200

31

PORTABLE 100 CLASSIFIEDS

35

ADVERTISER'S INDEX

36



Tandy 1400LT



## ROM WITH A VIEW

# Poetic License

CONTEST ANNOUNCEMENT! Portable 100, in coordination with Tandy Corporation, is having a contest open to EVERYONE, the grand prize is a Tandy Portable Disk Drive 2.

The contest itself is simple: Poetic License. That is, license plates that play on the portable computer industry (80C85, TPDD, M102, M100, M200, OLLYM10, NEC8201, NEC8300, and so forth). The rules are simple: All entries must be seven characters or less; valid characters include the uppercase English alphabet, the numerals zero (0) through nine (9), and the special characters #, \$, +, -, and & (sorry, but none of the other characters are allowed or available on license plates in most states).

The winning plate will be judged by the staff here at Portable 100, based on originality and cleverness (relevance to Tandy computing is a plus). In case of a tie, the entry with the earliest mail postmark date will be declared the winner.

The Tandy Portable Disk Drive 2 (catalog #26-3814) works through the serial port with all the Tandy 100, 102, 200 computers, and the NEC 8201A/8300 and KC-85 clone computers.

Because this is the March issue, the deadline for entries is May 31st, 1988. Send all entries to Portable 100 Poetic License Contest, P.O. Box 428, Peterborough, NH 03458-0428. Good luck!

As you may have noticed, February Portable 100 was quite late in coming to you last month. Unfortunately, so is this issue, and so will the next few issues. When dealing with a printer, you usually have a scheduled "window" of time to deliver them the magazine. Because of the Christmas holidays the January issue was mailed late. As a result, the February issue was similarly delayed and missed its window (mailing the February issue on time would have meant both January and February arriving almost at the same time, cheating the January advertisers). When we delivered the February issue, instead of the normal twelve day turn-around time, we were told it would be twenty-one days, minimum. We hadn't planned on that. (Sigh.)

We plan to bring the issues up to their proper mailing times, but it will be done a few days at a time so that the advertisers will get their money's worth. Please be patient with us.

Other important notes: Last month lots of people called to say that their issue arrived without its customary wrap. Sorry. The person running the bindery machine at the printer made a mistake and dropped the wraps into the wrong position, putting the wraps in the middle of the magazine instead of on the exterior. The printer promised it won't happen again.

Similarly, some people received an issue stating that this was their last issue, even though it wasn't. That was an error at the mailing label house; they put the wrong labels on wrong magazines. (Or is it the right labels on the wrong magazines?) They, too, promise it won't happen again.

There wasn't a winner in our January contest, although we did receive some very interesting letters, including one fellow who not only matched names to faces but also tried to pair us up. Because we have an odd number of people, this necessitated one menage a trois! Fortunately (!) his selections and matches were incorrect.

Terry Kepner

## Toolbox

Manuscripts were typed into Microsoft Word 3.0 on a Tandy 1400 LT, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 2.0a. There they were put into a rough approximation of the magazine's final appearance. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Next, the magazine was ported over to our Art Director's Macintosh II, using the 1400 LT and

Mac-link. She then went over the publication using Aldus Macintosh PageMaker 3.01, making final design decisions on photo, figure, and listing sizes and placements. She precisely placed the text and added all the little things that go into making a nice looking publication.

Page previews were output from her Laserprinter. When everyone was satisfied with the appearance, the Macintosh disk was sent to Colorite Corp. in Wisconsin for final output directly onto photographic paper. The finished magazine was then delivered to the printer, who printed it, labeled it, and mailed it to you.

## portable 100

PRESIDENT/PUBLISHER

Terry Kepner

EDITOR-IN-CHIEF

Terry Kepner

FEATURES EDITOR

David Klein

TECHNICAL EDITOR

Mike Nugent

NEW PRODUCTS EDITOR

Linda Tiernan

CONTRIBUTING EDITORS

Paul Globman

Thomas L. Quindry

CIRCULATION MANAGER

Bob Liddil

ADVERTISING DIRECTOR

Terry Kepner

Portable Computing  
International Corporation

145 Grove St. Ext., #21, PO Box 428  
Peterborough, NH 03458-0428

Editorial  
603-924-9455

Advertising  
603-924-9455

Circulation  
603-924-9455

Bulletin Board  
603-924-9770

(300/1200—8, None, 1)

Portable 100 (ISSN 0888-0131) is published by Portable Computing International Corporation, 145 Grove Street Ext., P.O. Box 428, Peterborough, NH 03458-0428. Portable 100 is an independent journal not connected with any hardware, software, or peripheral equipment manufacturer. Portable 100 is published monthly, except for a combined July/August issue in the summer. Entire contents Copyrighted 1988 by Portable Computing International Corporation, All Rights Reserved. No part of this publication may be reproduced without written permission from the publisher. Portable Computing International Corporation makes every effort to assure the accuracy of articles published in Portable 100, but assumes no responsibility for damages due to errors or omissions. Subscription Service: All subscription correspondence should be addressed to Portable 100, Portable Computing International Corporation, 145 Grove Street Ext., P.O. Box 428, Peterborough, NH 03458-0428. U.S. subscription rates: \$24.97, one year; \$45.97 two years. Canada and Mexico: US\$27.97, one year; US\$51.97 two years. All other foreign (surface mail): US\$44.97, one year; US\$85.97 two years. Foreign Air Mail, add US\$50 per subscription year. All payment, except Canada, U.S. funds drawn on U.S. Bank. Second-class postage paid at Peterborough, NH 03458, and at additional mailing offices.

POSTMASTER: Send address changes to: Portable 100, Portable Computing International Corporation, 145 Grove Street Ext., PO Box 428, Peterborough, NH 03458-0428.



## CORNY EDITORIAL

I have always enjoyed the technical articles in your magazine. As a "normal" subscriber, I read each copy cover to cover the day that it arrives. That is, until I started to read my December copy. *ROM WITH A VIEW* reminded me of my two wonderful (yes, I know this is also corny) daughters. Well, I finished the rest of the issue *a few days later*. And now my 9-year-old, Sarah, is starting to learn *BASIC*.

Thanks for the corny editorial. They are needed once in a while.

Rick Sparber  
Wheaton, IL

### SEEKING BIOFEEDBACK

I am an occupational therapist in Maine, and much of my case load is comprised of individuals who have incurred a CVA or "stroke." Frequently, an individual will lose control of the arm and leg on the affected side. Through rehabilitation some measure of lower extremity control is often regained. Unfortunately, we often experience less success with the arm and hand.

One method of retraining muscle control which might work is biofeedback. Most of the equipment I've seen is in the \$6,000 to \$20,000 price range. I'm wondering if anyone knows of a method to turn the Model 102 into such a device. Output from the muscles is in the micro-volt range, so an amplifier would be needed to bring the signal up to a level that the 102 could receive. Looking through some of my old issues of *Portable 100*, I came across an article on the DataMite from Jones Service and Design. I have purchased one of these and believe this will help me with the A/D conversion and software display.

I feel many individuals attempt to move their hands and arms, but when no motion is observed, soon give up. I believe that the 102 could become a valuable tool which could help make patients aware of very weak muscle contractions which are sometimes felt by the therapist's fingers. In this way the patients might become more efficient and successful in their attempts to retrain control of muscles which the stroke has incompletely taken away. I would greatly appreciate hearing from anyone who knows of a 102 being used in this way, or

a reader who might be able to assist me in constructing the amplifier. Thank you.

Bill Croninger  
RFD 1, Box 267  
Alfred, ME

### GIMME A CLUB!

I hear that there is a Tandy 100/102 user club in New York City but have not been able to locate them. Do you know how I can get in touch?

Stephen W. Lees  
Forest Hills, NY

## The Dvorak Keyboard System is now distributed by Granite Street Portables.

*No, but I wish I did. We get many such requests, so we want to compile a user group directory to post on the Portable BBS, publish in a future issue, mail to those who request it, or maybe all three. Any readers who know of any clubs/user groups, please send us the details. Thanks!*

-MN

### DVORAK FOUND

Months ago, I ordered a NEC 8201A program on cassette tape to convert the standard keyboard to Dvorak. The company (HSI; Monroe, Michigan) was no longer able to supply the product.

Since then, I've checked GENIE's laptop bulletin board but found nothing there. Do you know where I can locate a similar program, either on cassette or printed out for typing into the NEC?

I enjoy your magazine, even though I'm "BASIC"ly ignorant and not a programmer. Every issue teaches me something—a good investment.

Gary Sorenson  
Fargo, ND

Dvorak Keyboard System, for Tandy and NEC notebook computers, is now distributed by Granite Street Portables (see their ad). DKS is now available on disk as well as tape. Reviews have appeared in *Online Today*, *PICO*, and the Dvorak Developments newsletter. Look for one in a future issue of *Portable 100*.

-MN

### ACOUSTIC COUPLER

The Datatronics *Discovery 2100 Acoustic Coupler* plugs directly into the RJ-11 modular jack of an internal (or external) modem. It works well at 1200 baud. This was a great breakthrough for me, as I had previously been limited to 300 baud by my Epson CX21 acoustic modem.

This acoustic coupler cost only \$45.00 (US) in Hong Kong, and I'm sure it will be a hit with other portable users. I use it now with my Toshiba T1000 and its 1200 baud internal modem. It's made in Taiwan by Datatronics Technology; 172 Nan King E. Rd., Sec. 5; Taipei 10572, Taiwan. Phone (02) 762-3203.

Can your magazine cover products by other manufacturers?

Alex Fane  
Tokyo, Japan

*Thanks for the tip, Alex! It could be useful to 1400LT owners. Portable 100's focus is Tandy laptops, and since the NEC 8201/8300, Olivetti M10, and Kyotronic KC-85 are essentially Tandy clones, we try to cover them, too.*

-MN

### DOCTOR'S ORDERS

*MENUTL.CO* is just what the doctor ordered. Two weird things with my 102: *CODE-V* doesn't make the invisible files reappear (*CODE-C* does), and when the power times out and the screen blanks, switching the power back on puts one in the *Rename* mode for *BASIC* (pressing *SHIFT/BREAK* restores the normal menu).

Using a P.G. Design *Vault* with *POWER-DOS* leads to a cold start if *POWER-DOS* is not turned off before accessing the *Vault*. With *MENUTL.CO*'s ability to make files invisible from the main menu, it is impossible to accidentally access the *Vault*. A lifesaver!



(From: Kent Hansen, London, Ontario)  
David Tubman  
Portable BBS  
Message to SYSOP

*Is this message from Tubman or Hansen or both? Either way, it sounds like you got a dirty download, maybe due to noisy phone lines. The program works as advertised; better download it again, or you might get a cold start someday. If possible, use the Xmodem protocol, which automatically corrects transmission errors.*

-MN

## QUIBBLE, RESPONSE, COMMENT

A quibble, a response, and a comment provoked by your most interesting January issue:

The quibble: Actually, *Powr-DOS* works satisfactorily with the second version of the Portable Disk Drive. Some of the features are disabled—you can't access the Bank 1 directory, and the direct sector access features create problems—but for most purposes it is satisfactory. You can still store 200K on the diskette, which is the main point.

The response: I'm not exactly certain what Dave Terwelp (Jan. '89 "DEFUSR") is asking for, but one or more of these may meet his needs:

Jesse Bob Overholt's *DBASE.BA* (P100, Mar. '84) has some possibly useful hints.

Rick Perry and I have posted several files on CompuServe's M100SIG which may directly address the question; Rick's is *LOGON.100*, and mine are variations on *REDIAL.\**. I think they're in DL2 (Data Library 2), but I've stopped calling the SIG. Feel free to borrow anything useful.

The comment: I started putting copyright notices on certain CompuServe contributions when someone captured my review of *Powr-Disk*, did some minor editing, and sold it to an earlier version of this magazine. My object has never been to limit distribution (something I sometimes explain in the documentation); I just decided I needed to protect my work.

Phil Wheeler's right about the *XMODEM* program—it isn't Phil's to release to public domain. When J.R. Chenoweth first put the program on CIS, I was helping run a BBS and wanted the program; Chenoweth was very gracious about letting me copy it there. But I *did* ask and got a response. Phil's versions, as he says, merely enhance the Chenoweth code; if it was me, I'd certainly share his reservations about the copyright. Too bad, though; it's a terrific program.

I also agree with Thomas Quindry that those of us who post software on CompuServe and elsewhere could be more clear about our intentions. One of the

problems is that I'm nearly always exhausted at the end of a programming project; I nearly always forget to write everything necessary into the documentation. For the record: Anything I've posted on CompuServe was intended to be public domain, and anyone who wishes to pass it to other users is certainly welcome to do so, provided only that I am credited with authorship and that the copyright notices not be removed from the distribution copies.

Finally: My sincere thanks to you folks for rescuing this magazine, and congratulations on your first anniversary as publishers.

Joel Dinda  
Dimondale, MI

## HE WHO LAUGHS LAST...

I would like to thank you and congratulate you on *Portable 100's* re-emer-

## *Powr-DOS works satisfactorily with the second version of the Portable Disk Drive.*

gence and its quality. I'll have you know that I subscribed to *Portable 100* prior to purchasing the T200, and you convinced me even more of its usefulness and ease. It's lightweight, and the built-in programs make it ready to go.

My wife, who teased me about getting it in the first place, now uses it for letters and craft and recipe ideas. She's even used a few hours of NiCd's playing the December T200 puzzle.

I would strongly urge you to include T200 changes in T102 programs, due to *CALL's*, *PEEK's*, and *POKE's*, and I hope you continue to answer questions in your magazine. I haven't tried your BBS (I hope to soon), but I would hate to have it replace portions of your magazine. I would like to see a compatibility review of various products. I am also waiting for your article on the PDD-2, promised in an October 1987 article. The original article was great.

I enjoy getting *Portable 100* and look forward to every issue. I wish you well. Thanks, Mr. Kepner, Mark, and Nuge.

## Radio Shack-Tandy

Our 12th year of DISCOUNTS  
COMPUTERS & FAX  
& CELLULAR PHONES  
FREIGHT PREPAID. SAVE TAX  
TOLL FREE 800-231-3680



We will meet or beat...  
GUARANTEED LOWEST PRICES

**MARYMAC** INDUSTRIES INC

22511 Katy Fwy.

Katy (Houston), TX 77450

1-713-392-0747 FAX (713) 547-4567

Circle 121 on reader service card.

Please don't stop.

Jurgan Almlie  
Jordan, NY

*Stop? No way—then we'd have to get real jobs! Don't worry, we'll keep answering questions in the magazine; PBBS is just an extra service. As for the PEEK's and POKE's, we do it whenever possible, but some programs aren't easily converted, and we haven't time to rewrite 'em. If someone sends us converted programs, we'll try to put them on the PBBS and P100-To-Go. I assume the October '87 article you mentioned is Tom Quindry's review of PDD-1 DOS's. We're working on an update to that and planning another for PDD-2 DOS's.*

*Since Mrs. Almlie's NiCd habit is probably tough on your budget, we've put the PUZZLE.BA solution in this issue. But be warned—even with the solution, it's not easy!*

-MN

## ?IO—CORRECTIONS

Highlights of the "January 1989 Issue Screw-ups Competition":

In "CUSTOM 200," we mis-captioned Paul Globman's letter (Figure 2). The bar graphs were produced with Lucid, not MSPLAN.

Paul's KILL.BA (same issue, p. 21) causes problems in some machines (see "DEFUSR"). The solution is to change POKE AD,10 in line 2 to POKE AD,5.

Final score: Globman—1, P100—1. A tie!

-MN

*We welcome all letters from our readers, whether critical or complimentary. We print as many letters as space permits (some are edited for space considerations). Address your correspondence to: Portable 100, I/O Dept., P.O. Box 428, Peterborough, NH 03458-0428.*



# DOS Patches III

*"Stitch" in these improved patches for the PDD-2.*

*by Mike (The Tailor) Nugent*

**G**ood news—I was wrong! In earlier discussions of patching the disk operating system (DOS) for Tandy's Portable Disk Drive 2, I stated that, since the patched DOS cannot be saved as a file, you must re-patch each time you install the DOS. 'Tain't so! Troublemaker/genius Robert Holland, Sr., took me to task on that and showed how to save the DOS as a file. (See "DEFUSK")

Thus chastised and inspired, I've further refined his method and am happy to present the improved patches. Those who've requested more technical explanations, read on. Sane people can skip straight to the patches (see "PATCHING THE DOS" below).

## WHY PATCH DOS?

The need arose when Tandy's first DOS, *FLOPPY.CO* for the original Portable Disk Drive (PDD-1), proved hostile to the kind of file containing machine language *packed* inside a *BASIC* program. Such a file must reside at a specific address in RAM—usually the very lowest address—to work. If it gets moved, it malfunctions, usually causing a cold start.

Unfortunately, *FLOPPY.CO* loads *.BA* files from disk into the lowest RAM address, pushing all existing files upward in memory to make room. If one of those pushed files is a packed file—WHAM! System crash.

No such problem with cassette, which loads *.BA* files into the "unsaved-BASIC-program" area just above existing *.BA* files. The computer maintains a *pointer* to this area to keep track of its position, and the cassette routine simply reads the pointer to find the program. Only files *above* this area (*.DO* and *.CO* files) are pushed upward to accommodate the new file. All existing *.BA* files, being *below* it, remain safely in place.

Why wasn't *FLOPPY.CO* designed to read that pointer and do the same thing? Who knows? It should have been.

So patches were developed to make the DOS do just that. You can save the patched code as a file named *NEWDOS.CO* (to indicate its modified state), and thereafter, you would use *NEWDOS.CO* instead of *FLOPPY.CO* as DOS.

With DOS thus tamed, the world was once again safe for packed programs like Micro Demon's *Supera*, P.G. Design's *MENU.BA*, Tri-Mike's *DVORAK*, etc.

## BUT LATER ...

When Tandy introduced the Portable Disk Drive 2 (PDD-2), computers with packed files began going kablooeey again. Had the PDD-2 DOS inherited its predecessor's genetic defect?

Precisely. Tandy had blown an opportunity to fix the flaw that made the old DOS hostile to packed programs. What they had not blown, however, was the opportunity to make the new DOS hostile to even *more* programs—including their own!

Was there some logical reason? Well, sort of. To understand it, let's examine the way the computer handles *.CO* files.

## .CO DYNAMICS

All files are stored in low memory. Whereas *.BA* and *.DO* files operate right where they're stored, a machine language (*.CO*) file can operate only at the address for which it was written, usually somewhere in high memory. So the machine's designers had to provide a way to execute such *.CO* files.

Remember the term *pointer*? The variable *MAXRAM* is a pointer to the highest address that any program may use (Model 100—62960; Tandy 200—61104). Memory from there on up is reserved as a scratchpad where the computer can track essential data such as file locations, the contents of the LCD screen, and other "housekeeping" information, so the computer is necessarily quite protective of this area. In effect, *MAXRAM* acts as the "ceiling" of memory, carefully guarding what's in the "attic" above.

*HIMEM*, another pointer, can be set via the *CLEAR* statement to point anywhere from *MAXRAM* on down, acting as a "false ceiling" or "drop ceiling." Most programs normally are not allowed to use memory from *HIMEM* on up, so that area between *HIMEM* and *MAXRAM* provides a safe place for *.CO* files to operate.

Take *MYFILE.CO*, a hypothetical 2959-byte Model 100 program, written to execute at address 60000. The file actually occupies 2965 bytes (2959 bytes plus 6 bytes of header information) somewhere in low memory. It can't run there—it's only stored.

To run it, you'd first issue a *CLEAR 256, 60000* to set the *HIMEM* pointer to 60000. This reserves a safe place for the file to operate—between *HIMEM* (60000) and *MAXRAM* (62960). Then *LOADM "MYFILE"* puts a copy of *MYFILE.CO* (minus header)

---

**If one of those pushed  
files is a packed file—  
WHAM!**

---



into the reserved space.

Now two copies of the file exist—*MYFILE.CO* stored in low memory (and showing on the menu) and an executable copy in high memory. *CALL 60000* (its execution address) will now run the executable copy.

So you can see that running a *.CO* file consumes *twice* its normal space requirement. The file on the menu is strictly for storage, while the high memory copy executes. And therein lies the drawback of normal *.CO* files: It takes two to tango, but only one dances!

### TANDY'S BETTER IDEA

Well, then, you can save space by having no menu copy. You can just keep an executable copy in high memory and *CALL* it whenever you want to run it, right?

Absolutely. That's what Tandy did. Putting only a tiny driver/checksum program (called *FLOPPY*) on the menu, it parks the executable DOS in high memory where it must be fiercely protected.

Setting the *HIMEM* pointer isn't enough. All manner of other programs change *HIMEM*, endangering the DOS. Some may even *LOADM* other *.CO* files right on top of it, corrupting it, with disastrous results when you *CALL* it later. It needs tougher measures.

The *MAXRAM* pointer, normally fixed, can be lowered artificially by means of special machine language programming voodoo (beyond the scope of this article). The PDD-2 DOS uses this voodoo.

### THOU SHALT NOT

*MAXRAM* is somewhat sacred. Thou shalt not perform *CLEAR* with any address greater than *MAXRAM*; the computer won't let you. *CLEAR 256, MAXRAM*, a common statement in *BASIC* programs, can set *HIMEM* equal to—but never greater than—*MAXRAM*. So *CLEAR* statements can't disturb the DOS in the "attic" above the lowered *MAXRAM*.

But misguided *POKEs* can still pelt it, and *LOADMs* and *RUNMs* can still dump *.CO* files all over it. So there's another safety feature: *FLOPPY*, the driver/checksum program on the menu. When you run it, *FLOPPY* does a checksum on the DOS to detect corruption. If DOS is indeed farked, *FLOPPY* refuses to run it.

### NOT ALL ROSES

What seems a logical memory-saving scheme has some serious flaws. Any program needing DOS-occupied RAM is either refused admittance or corrupts the DOS, depending on its nature. Either case requires *FREMEM.BA* to kill *FLOPPY* and perform the necessary reverse voodoo to normalize *MAXRAM*.

In the first case (refused admittance) you must run *FREMEM.BA* before the offending program, then reboot the DOS afterwards. With the numerous programs that DOS finds offensive, this process becomes a tiresome pain in the neck.

In the second case (trashed DOS), *FREMEM.BA* must already be in RAM to clean up the mess before you reboot the DOS. Otherwise, you'll have to cold start, since the demented DOS can't load it from disk. Keeping *FREMEM.BA* in RAM is necessary for safety but tends to offset the intended memory savings.

Together, *FREMEM.BA* and *FLOPPY* use two directory slots and 411 bytes. *FLOPPY's* counterpart in the DOS code, unneces-

sary in a normal *.CO* file, further offsets the perceived savings. And then there's the high memory permanently occupied by the DOS. Is it worth it?

### GOOD OLD FLOPPY.CO

Actually, for the price of a little "wasted" memory—and only at run time—the more conventional *FLOPPY.CO* has a lot going for it. Foremost is flexibility. It's one file in one directory slot, easily saved to tape and disk or uploaded to other computers. It's unobtrusive when idle, doesn't tie up high memory, and requires no cold starts. And when patched, it coexists peacefully with most any program. Not a bad set of credentials.

### PATCHING THE DOS

To turn the arrogant PDD-2 DOS into a nice guy, too, boot the DOS, type the appropriate line below, and press *ENTER*:

M100—*POKE 62116,154: POKE 62117,249: POKE 62118,0*  
T200—*POKE 58799,149: POKE 58800,242: POKE 58801,0*

These patches make the DOS load *.BA* files into the unsaved-*BASIC*-program area, for compatibility with packed files.

We're creating a normal *.CO* file, where a fresh copy loads each time it's run. Corruption won't occur, so we can dispense with any checksum-related code (e.g., the first three bytes of DOS, at *MAXRAM*—we'll skip them).

When you save *NEWDOS*, you'll use a statement that resembles this: *SAVEM "NEWDOS", Top, End, Exe*, where you'll save from a *Top* address of *MAXRAM+3* (M100—60003; T200—56675) to an *End* address one byte before *FLOPPY's* load point (M100—62700; T200—59393). And when DOS is uncorrupted, *FLOPPY* jumps to *MAXRAM+3* to execute the DOS; that's our *Exe* address (coincidentally, the same as *Top*).

With this, you're ready to save the code to a *.CO* file. Type the appropriate line below and press *ENTER*:

M100—Type *SAVEM "NEWDOS", 60003, 62700, 60003*  
T200—Type *SAVEM "NEWDOS", 56675, 59393, 56675*

That creates *NEWDOS.CO*, weighing only 2704 bytes (2725 on the T200). Now run *FREMEM.BA* (use *FLOPPY* to load it from disk, if necessary) and then kill *FREMEM.BA*.

To run *NEWDOS.CO*, type *CLEAR 256, Top: RUNM "NEWDOS"* (in place of *Top* type 60003 for M100, 56675 for T200) and press *ENTER*. If you can spare a directory slot, you can save that line as a short *.BA*

program that runs *NEWDOS.CO* for you, so you needn't remember the *Top* address for the *CLEAR* statement. To reclaim the high memory after using *NEWDOS.CO*, type *CLEAR 256, MAXRAM* and press *ENTER*.

By the way, if you ever forget the starting address of *NEWDOS.CO*, just type *LOADM "NEWDOS"* and press *ENTER*. *NEWDOS* attempts to load, and in doing so, it displays the *Top*, *End*, and *Exe* addresses of the file.

Be sure to save *NEWDOS.CO* to the same disk you use to boot *FLOPPY*. Then if you ever accidentally kill *NEWDOS.CO* or have a cold start (which should happen less often now), just boot *FLOPPY* and use it to load *NEWDOS.CO* and *FREMEM.BA*. Run *FREMEM.BA* and then kill it. Voila! Back to normal.



## The drawback of normal .CO files: It takes two to tango, but only one dances!



COMPATIBILITY: Tandy 100/102 only

# TEXTSTAR

*Get WordStar cursor control for TEXT.*

*by Stan Wong*

I'm a *WordStar* addict. There is nothing flashy about the program. It's not even sexy. But I love *WordStar* and its arcane cursor movement and control commands. It was, and still is, one of the few word processing programs supported across many different machines and operating systems. I use it on a DEC Rainbow and a 386 PC at work. I use it on my IBM PC/XT. And I bought an NEC 8500 CP/M laptop because it had *WordStar* built in.

My fingers get cramps every time I use my trusty Model 100, and trying to remember the different cursor movement and editing commands drives me batty.

Well, no more!

## A DIAMOND IN THE ROUGH

The Model 100 *TEXT* program already implements the famous *WordStar* cursor control-character "diamond"—<sup>^</sup>S,<sup>^</sup>E,<sup>^</sup>D,<sup>^</sup>X, where the caret (^) signifies holding down the CTRL key, as *WordStar* users know—but it doesn't go far enough.

So I've polished up the diamond a bit. I've written a small machine language program called *TextStar* (or *Text\** to its friends), which implements most of the *WordStar* cursor movement commands as well as some text deletion and other miscellaneous commands.

*TextStar* is not a complete program by itself. Instead, it enhances the operation of *TEXT*. Although *TextStar*'s cursor control looks and feels like *WordStar*, it still retains a *TEXT*-like flavor. See the sidebar "Inside *TextStar*" for technical information on how it performs its magic.

*TextStar* extends the operation of *TEXT* by redefining the meaning of the control keys, where possible, to match those of *WordStar* (See Table 1). Even multiple-keystroke commands, such as <sup>^</sup>QD, are supported. Control keys that have not been redefined still retain their *TEXT* meanings. For instance, <sup>^</sup>B still moves the cursor to the bottom of the screen. <sup>^</sup>T will not, however, move you to the top of the screen but will delete a word instead.

A simple change to *TextStar* could have made it ignore the *TEXT* control keys, but I felt it would be better to leave them in. The program owes its small size (381 bytes) to its method; it traps keyboard input and translates only *WordStar* control codes into their *TEXT* equivalents, passing all other keystrokes directly to *TEXT* for normal processing.

## VIVE LA DIFFERENCE!

However, *TextStar* does not perform exactly like *WordStar*. Because it enhances the *TEXT* program, it is bound by certain *TEXT* conventions.

```

0 'txtstr
1 GOSUB99
2 PRINT@42,"Enter end address";:PRINT@82
3 "<ENTER> for just below current HIMEM"
4 Y="":PRINT@122,SPACE$(30);:PRINT@122,;
5 :INPUTY:IFY=" "THENB=HIMEM-E-1ELSEB=VAL(Y
6 )-E
7 IFB>=MAXRAM-ETHENBEEP:GOTO4ELSECLEAR25
8 B:B=HIMEM:GOSUB99
9 CLS:A=B:C=B+E:D=D+B:S=99:M=99:PRINT@48
10 "Line";:PRINT@88,"Address";
11 GOSUB60:IFO=0THENPOKEA,K:A=A+1:GOTO7
12 P=K:GOSUB60:G=P+256*K+B:P=INT(G/256):Q
13 =G-P*256
14 POKEA,Q:A=A+1:POKEA,P:A=A+1:GOTO7
15 SAVEM"TXTSTR",B,C,D:MENU
16 U=INSTR(1,Z,MID$(Y,M,1)):IFU=0THEN55
17 IFU>16THENU=U-16:O=1ELSEO=0
18 V=INSTR(1,Z,MID$(Y,M+1,1)):IFV=0ORV>1
19 6THEN55
20 K=(U-1)*16+V-1:RETURN
21 BEEP:PRINT@165,"Bad character";:END
22 IFM<N*2+5THEN70
23 IFL<>RTHENBEEP:PRINT@165,"Checksum fa
24 il";:END
25 READY:M=1:GOSUB50:IFK=0THEN40
26 S=S+1:PRINT@70,S;:PRINT@110,A;:N=K:M=
27 3:GOSUB50:M=5:L=K:GOSUB50:L=K*256+L:R=0
28 70 M=M+2:GOSUB50:R=R+K:RETURN
29 DEFINTI-X:DEFSTRY-Z:Z="0123456789ABCD
30 EFGHIJKLMNOPQRSTUVWXYZ":CLS:E=380:D=0:RETURN
31 100 DATA386E1A2ADEF22N70121J90122DEFA2A
32 12FB22N90121LD012212FB21000022E7F6C3EE5D
33 32DFF6F5CDEC65F1DA0165FE7FCA1861FE20DAPC
34 00F53A
35 101 DATA38E217NC01FE01CAM8003ANB01FE01CA
36 KB00F1C38A603E0032NB01F1CDME01FE42CAS800
37 FE59CASD00FE44CALD013E0AC305603E0032NC01
38 F1CDME
39 102 DATA38431C01FE43DAP700CAT200FE44CAT7
40 00FE53CAV800FE58CAVD00FE52CAV300FE45CATC
41 00FE59CAG7013E0AC30560FE07CA1861FE14CAH6
42 01FE19

```

continued

Listing 1. The BASIC loader for TXTSTR. Use this program to create the .CO program instead of using the assembly code in Listing 1.



**Cursor Movement**

<b>^D</b>	Right one character
<b>^F</b>	Right one word
<b>^QD</b>	Right to end of current line
<b>^S</b>	Left one character
<b>^A</b>	Left one word
<b>^QS</b>	Left to beginning of current line
<b>^E</b>	Up one line
<b>^QE</b>	Top of screen, column 1
<b>^QR</b>	Top of file
<b>^X</b>	Down one line
<b>^QX</b>	Bottom of screen, right end of line
<b>^QC</b>	End of file

**Text Deletion**

<b>^G</b>	Delete character under the cursor
<b>^T</b>	Delete word
<b>^Y</b>	Delete line
<b>^QY</b>	Delete to end of line

**Miscellaneous**

<b>^KB</b>	Mark start of block (same as F7)
<b>^KY</b>	Delete block (same as F6)*
<b>^KD</b>	Exit TextStar to menu (same as F8)

\* Note: The ^KY command operates differently in TextStar. In Wordstar you would normally have to type ^KK to mark the end of a block before deleting it. However, ^KY, as defined here, is more consistent with the TEXT function key meanings.

Table 1. With TXTSTR, you can use these WordStar keystrokes in TEXT. As with WordStar, the caret (^) indicates that you hold down the CTRL key.

```

103 DATA387E15CAI501FE0BCAR800FE11CAS000
C30560F53E0132NB01F1C9F53E0132NC01F1C93E
0CC305603E15C305603E1AC305603E12C305603E
14CD05
104 DATA384F12603A88F7FE00C2UE003E0AC305
603E11C305603E17C305603E11C305603E02CD05
603E12C305603E0CCD05603E12CD05603E15C305
603E0C
105 DATA387C11CD05603E06CD05603E15C30560
3E11CD05603E0CCD05603E18CD05603E15C30560
F3C5D5210000039EB01140021000003909F921I100
E301F0
106 DATA2DD4155F08CAL70109E3EBF9D1C1FBC9
E52AN70122DEFA2AN9012212FBE1C39757FE61D8
FE7BD0D620C90000000000000000000000000000
107 DATA00

```

end of listing

For instance, when moving up and down a line, *WordStar* moves the cursor to the end of the line if the destination line is shorter. But *TextStar*, like *TEXT*, leaves the cursor in the same column regardless of the destination line's length.

As a bonus, the text deletion commands ^T and ^Y store the deleted text in the paste buffer. So if you make a mistake you can recover the text by pressing the PASTE key. This gives you a simple "UNDO" facility.

**A STAR IS BORN**

Listing 1 is a relocating *BASIC* loader. It creates a machine language program, *TXTSTR.CO*, to run anywhere you specify in high memory, or it will default to loading just under the current *HIMEM*. It can thus coexist with your other *.CO* programs. (Thanks to Phil Wheeler for his *BASBLD.PW3* program, which I used to create the loader.)

Listing 2 is the assembly language source code for *TextStar*. I used the *ADSM* assembler by James Yi, which you can find on the CompuServe Model 100 Forum. Minor syntax changes to the source code will also make it compatible with the *ROM2* assembler from Traveling Software, which I used to do the initial program development.

You have no need to use the assembly language listing,

Continued on page 10

# INSIDE *TextStar*

The key to *TextStar*'s operation is its ability to intercept keystrokes before *TEXT* sees them, by using a programming mechanism known as a *RAM hook*. Before I describe how *TextStar* uses RAM hooks, let's take a look at what *TEXT* does with your keystrokes.

The *TEXT* program is constructed as one big loop starting at ROM address 5DEEH. *TEXT* waits for your keystroke, gets it, and takes the appropriate action.

It's interesting to note that near the beginning of *TEXT*, the program pushes the address of the top-of-the-*TEXT* loop onto the stack.

Normal loops end with a *JMP nnnn* instruction, where *nnnn* is the address of the top of the loop. But by pushing the top-of-the-loop address on the stack, the program can instead simply execute a *RET* instruction from anywhere to get back to the start.

This has two advantages. First, it saves memory for each loop return point. It needs only one byte for the *RET* instruction versus three for the *JMP*. Second, the code can be more easily

relocated. If the code is, for some reason, changed and shifted in memory, then all the *JMP* instructions do not have to be recoded with the new top-of-the-loop address.

**GIVE 'EM THE HOOK, THE HOOK ...**

*TEXT* uses a ROM routine known as *CHGET* (located at 12CBH) to wait for your next keystroke. The *TEXT* call to this "Tandy-documented" routine is at address 63F1H.

*CHGET* makes use of a RAM hook. What's a RAM hook? Is it related to Captain Hook? Not really.

A RAM hook is a programming mechanism by which the system designer provides a way for users to modify or replace certain system routines. RAM hooks are commonly provided for ROM routines, since code in ROM is fixed and cannot be changed.

Specifically, some ROM routines incorporate an *RST 7* instruction to give users access to hooks, allowing them an oppor-

Continued on page 11



## INPUT - OUTPUT

Need to get analog voltage  
or digital switch information  
into your M102?

Want to send analog or  
digital data from your M102?

Low cost hardware which  
plugs into system bus.

Call or write:

### Rural Engineering Inc.

Route 14, Box 113F  
So. Royalton, VT 05068  
Tel. (802) 763-8367

Circle 88 on reader service card.

## WORD PROCESSING

however, other than to understand what  
*TextStar* is doing and how it does it.

### A RISING STAR

To run *TextStar*, place the widebar  
cursor over *TEXTSTR.CO* on the main  
menu and press *ENTER*. You should then  
see *TEXT*'s familiar *File to edit?* prompt.  
Specify the *.DO* file to edit, and you're on  
your way.

If the program doesn't start, go into  
*BASIC* and type *CLEAR 0, nnnnn* (where  
*nnnnn* is the load point) and then try  
again. If you don't know the load point,  
type *LOADM "TEXTSTR"* and use the *Top*  
address, returned by the *LOADM* com-

mand, as the load point (*nnnnn*) for the  
*CLEAR* statement above.

### WHERE TO GET TEXTSTAR

*TextStar* is also available on the *P100-  
To-Go* disk and on the *Portable BBS* (603-  
924-9770) as *TEXTSTR.100*. If you need the  
program and listings on a cassette tape,  
send \$6 to me at P.O. Box 28181, Santa  
Ana, CA 92799. You can also contact me  
via CompuServe user ID 70346,1267. I  
support the program on the M100SIG of  
CompuServe.

Those cramps in my fingers are finally  
starting to disappear. Happy typing!

☆



```
;TextStar - Wordstar(tm) commands
;for the Model 100
; Version 1.0 11 October 1988
;
;Copyright (c) 1988 by Stanley Wong
;All Rights Reserved
;
;ADSM assembler syntax
;See Table 1 for commands supported.
;See Listing 2 for Basic loader
;
;Equates
;
MENU EQU 22423D ;go to main MENU
;($5797)
TEXT EQU 24046D ;TEXT program
;entry ($5DEE)
BEEP EQU 7662H ;beep routine
GETKEY EQU 64222D ;GHGET hook
;($FADE)
;
;Other Rom Routine Addresses
;
;-----
;$5FF0 - return to TEXT from GHGET
;$6005 - process control key
;$608A - process keystroke
;$6118 - DEL routine
;
;
ORG 62500
WSTINI LHL GETKEY ;point to
;GETKEY hook
SHLD GKHOOK ;save original
;value
LXI H, TS1 ;point to our
;code to examine
;keystrokes
SHLD GETKEY ;GETKEY hook to
;our code
LHL $FB12 ;save original
```

Continued

```
SHLD MHOOK ;menu hook
LXI H, F8 ;set Menu hook
;to our code

SHLD $FB12
LXI H, 0
SHLD F6E7H
JMP TEXT ;enter TEXT
;program

;
;Examine Key Press
; Code at TS1 inserts a RETURN to here
; if in TEXT
; TS1 is called from GETKEY RST 7 hook
;
WSTXT
;
;-----
;This code is Copyright by Microsoft
STA F6DFH ;Duplicate ROM
;code here
PUSH PSW ;until we detect
; CTRL keystroke

CALL 65ECH
POP PSW
JC 6501H
CPI 127
JZ 6118H ;DEL key
CPI 32

;-----End of Microsoft code-----
JC CTRL ;CTRL key
;A regular character received
PUSH PSW
LDA CQFLAG ;check ctrl-Q
;flag

CPI 1
JZ CQON ;^Q in effect
LDA CKFLAG ;check ctrl-K
;flag

CPI 1
JZ CKON ;^K in effect
POP PSW
JMP 608AH ;continue in rom

;
;control-K in effect
CKON MVI A, 0 ;turn off flag
STA CKFLAG
POP PSW
```

Continued

Listing 2. The assembly code for *TEXTSTR*, a program that makes *TEXT* emulate  
*WordStar* control code commands.



# WORD PROCESSING

tunity to "splice in" their own code instead. It works like this.

At address FADAH is a "hook table," each table entry being a two-byte address. In effect, the *RST 7* instruction is a *CALL* to one of these addresses. It finds the appropriate entry by adding an offset byte (which follows the *RST 7* instruction in the ROM routine) to the start of the table, and then *CALL*'s the address stored there.

For example, the *CHGET* routine incorporates an *RST 7* instruction at the beginning of the routine. The value of the offset byte is 4. This means that the RAM hook at FADEH (FADAH+4) is used for *CHGET*.

Since most entries in the hook table point to a *RET* instruction in ROM (at 7FF3H), the *RST 7* normally *CALL*'s 7FF3H, which simply returns back to the

ROM routine, chewing up a few machine cycles and nothing more.

But since the hook table is in RAM, the user may change an entry to point to his own routine, in which case the *RST 7* performs a *CALL* to the user's routine.

Once *RST 7* locates the two-byte address in the table, it executes the routine located at that stored address. For routines like *TextStar* that use these hooks, *RST 7* effectively *CALL*'s *TextStar*, which does its business on a keystroke and then returns to *CHGET*.

Thus, a hook gives us a chance to sneak in and peek at a keystroke before it is processed and returned to *TEXT*.

## CAN YOU DIRECT ME TO ... ?

Okay, so now that we know what a RAM hook is, how do we use it? The first thing to do is save the original contents of

## Used Laptops

*We Buy, Sell & Horsetrade*

### Popular Computers

Model 100 .....	\$275.
Model 102 .....	325.
Model 200 .....	325.
Model 600 .....	400.
Disk-video I'face .....	115.
Disk Drives .....	Call
MS-DOS .....	Call
Apple & IBM Parts .....	Call

Shreve Systems

2421 Malcolm St.

Shreveport, LA 71108

318-865-6743

FAX 318-865-2006

Circle 20 on reader service card.

```

CALL    LW2UP    ;force to upper
          ;case
CPI      66      ;^KB?
JZ       CTRLKB
CPI      89      ;^KY?
JZ       CTRLKY
CPI      68      ;^KD?
JZ       F8
MVI      A,10    ;ignore
JMP      $6005

;
;control-Q in effect
CQON     MVI      A,0    ;turn off flag
          STA      CQFLAG
          POP      PSW
          CALL     LW2UP
          CPI      67      ;^QC?
          JC       IGN2
          JZ       CTRLQC
          CPI      68      ;^QD?
          JZ       CTRLQD
          CPI      83      ;^QS?
          JZ       CTRLQS
          CPI      88      ;^QX?
          JZ       CTRLQX
          CPI      82      ;^QR?
          JZ       CTRLQR
          CPI      69      ;^QE?
          JZ       CTRLQE
          CPI      89      ;^QY?
          JZ       CTRLQY
IGN2     MVI      A,10    ;ignore
          JMP      $6005

;
;Look for our control characters
;
CTRL     CPI      7       ;ctrl-G ?
          JZ       $6118   ;yes-jump to
          ;DEL routine
          CPI      20      ;ctrl-T ?
          JZ       CTRLT
          CPI      25      ;ctrl-Y ?

```

```

JZ       CTRLY
CPI      11      ;ctrl-K ?
JZ       CTRLK
CPI      17      ;ctrl-Q ?
JZ       CTRLQ
JMP      6005H   ;continue in ROM

;
CTRLK    PUSH     PSW     ;^K received,
          ;wait for next
          ;char.
          MVI      A,1    ;set ckflag
          STA      CKFLAG
          POP      PSW

;
CTRLQ    PUSH     PSW     ;^Q received,
          ;wait for next
          ;char.
          MVI      A,1    ;set cqflag
          STA      CQFLAG
          POP      PSW
          RET

;-----
CTRLKB   MVI      A,12    ;^L - select
          ;text mode
          JMP      $6005
CTRLKY   MVI      A,21    ;^U - cut(F6)
          JMP      $6005
;-----
CTRLQC   MVI      A,26    ;move to eof
          ;(^Z)
          JMP      $6005
CTRLQD   MVI      A,18    ;end of line
          ;(^R)
          JMP      $6005
CTRLQE   MVI      A,20    ;top of screen
          ;(^T)
          CALL     $6005
          LDA      F788H
          CPI      0
          JNZ      X1
          MVI      A,10

```

Continued

Continued



# WORD PROCESSING

```

X1      JMP      $6005
        MVI      A,17
        JMP      $6005
CTRLQR  MVI      A,23      ;beginning of
                           ;file (^W)
        JMP      $6005
CTRLQS  MVI      A,17      ;beginning of
                           ;line (^Q)
        JMP      $6005
CTRLQX  MVI      A,2       ;bottom of
                           ;screen (^B)
        CALL     $6005
        MVI      A,18      ;right end of
                           ;last line
        JMP      $6005
CTRLQY  MVI      A,12      ;^L - select
                           ;text mode
        CALL     $6005
        MVI      A,18      ;^R - beginning
                           ;of line
        CALL     $6005
        MVI      A,21      ;^U - cut
        JMP      $6005
;-----
CTRLT   MVI      A,12      ;^L - select
                           ;text mode
        CALL     $6005
        MVI      A,6       ;^F - move to
                           ; next word
        CALL     $6005
        MVI      A,21      ;^U - cut (F6)
        JMP      $6005
;
CTRLY   MVI      A,17      ;^Q - move to
                           ;left of line
        CALL     $6005
        MVI      A,12      ;^L - select
                           ;text mode
        CALL     $6005
        MVI      A,24      ;^X - move

```

continued

```

                           ;down a line
        CALL     $6005
        MVI      A,21      ;^U - cut (F6)
        JMP      $6005
;
;
;RST 7 hook from GETKEY
;
;10 levels down in stack is the return
; address to the calling routine. If it
; is 5FF0H then the call is from TEXT.
; Put a return to WSTXT. If not, then
; leave everything alone.
;
TS1      DI                      ;don't bother
                           ;me, kid...
        PUSH     B              ;save registers
                           ;used
        PUSH     D
        LXI      H,0
        DAD      SP
        XCHG                      ;save SP in D
;
        LXI      B,20          ;get return
                           ;address 10
        LXI      H,0          ;layers down in
                           ;stack
        DAD      SP          ;HL<--SP
        DAD      B          ;HL<--SP+20
        SPHL                      ;SP<--SP+20
;
        LXI      H,WSTXT      ;RETurn to WSTXT
                           ;instead of
                           ;5FF0H
        XTHL
        LXI      B,$5FF0      ;Was it called
                           ;from TEXT?
        DB      8              ; (hl<--hl-bc)
        JZ      TSX          ;Yes
        DAD      B
        XTHL                      :No

```

continued

the RAM hook at FADEH. Typically it is just a pointer to a *RET* (address 7FF3H), but someone else might be using it, so we'll politely save it and restore it when we're done.

Next, we put the address of our own code (we'll use the address *TS1*) into the hook. Now every time *TEXT* gets a keystroke, we get a peek at it first.

## RELAX AND UNWIND

Now that we can get a peek at a keystroke before *TEXT* does, what next?

Other programs use the *CHGET* routine, too. So we have to make sure that *CHGET* was invoked by *TEXT* and not another program. *TEXT* calls *CHGET* at address 5FEDH. (Actually, it's called at 63F1H, from within a routine called by 5FEDH.) This means that there will be a *RETurn* to 5FF0H somewhere on the stack.

When we get control via the FADEH RAM hook, the return address to *TEXT*, if it was called by *TEXT*, is 10 levels (20 bytes) down in the stack.

So we have to unwind the stack 10 levels and see if the address 5FF0H is there. If it is, then *CHGET* was called from *TEXT* and this keystroke is for us. If not, then we must put everything back

the way it was.

How can a keystroke in *TEXT* not be for us? There are functions within *TEXT*, such as the *F1* (*Find*) function, that require keyboard input separate from the main *TEXT* processing loop.

The stack unwinding code is liberally borrowed from the *TXT-OV.ASM* program by James Yi and Paul Globman. The code uses an undocumented 8085 instruction that subtracts *BC* from *HL* and stores the result in *HL*:

```
HL ← HL - BC
```

The mnemonic for this instruction is *HLMBC* in the *ROM2* assembler syntax and *DSUB* in the *ADSM* assembler. If defined instead as *DB 8*, as in Listing 1, all assemblers will support it.

Sixteen-bit arithmetic on the 8085 is quite limited. This, and several other undocumented instructions, can save many instructions and make for easier programming.

## WHAT A CHARACTER!

At label *WSTXT*, we examine the keystroke. If the character is a control character, then we have to look for "our" control



```

TSX      XCHG          ;Restore stack
        SPHL          ;(old SP was
                ;in DE)

        POP           D
        POP           B
        EI            ;allow
                ;interrupts
        RET           ;RETURN from
                ;hook

;
;Menu hook (F8 keypress to exit WS-TEXT)
;
F8      PUSH          H
        LHL          GKHOOK ;Restore
                ;original GETKEY
                ;hook

        SHLD          GETKEY
        LHL          MHOOK ;Restore
                ;original Menu
                ;hook

        SHLD          $FB12
        POP           H
        JMP           MENU ;return to MENU

;
;Convert lower to upper case
; input/output in A-register
LW2UP   CPI           97      ;lower case is
        RC            ; in the range
        CPI           123     ; 97<=A<=122
        RNC
        SUI           32      ;convert
        RET

;
;Storage
;
GKHOOK  DW            0       ;GETKEY hook
MHOOK   DW            0       ;MENU hook
CKFLAG  DB            0       ;ctrl-K flag
CQFLAG  DB            0       ;ctrl-Q flag
;
        END              ;of TextStar

```

End of listing.

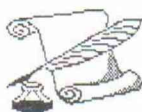
characters. Otherwise, we pass control to ROM location 6005H for control characters and location 608AH for "normal" characters and process the keystroke as if we had never been there.

When we do find our control character, we simulate the *Wordstar* control sequence by sending *TEXT* a series of its own commands that will implement the *Wordstar* function. Look at the code for the ^Y function (delete line) as an example.

Multiple keystroke sequences, such as ^KD, pose a more difficult problem. When a ^K is typed, we can't act until we know what the next keystroke is. The solution is to set a flag indicating that the ^K has been typed. On every keystroke we have to check the flag to see if a ^K is in effect.

On a ^KD (or F8) exit command, we must restore the RAM hooks to their original values and exit to the main menu by JMPing to location 5797H. Failure to do so may result in a machine that feels very cool to the touch (i.e., COLD START!).

☆



continued from page 21

### A PROGRAM YOU SHOULDN'T BE WITHOUT

In the past five months, I have tried various ways to get the most programs at my fingertips in RAM without starting a war among the TSR's. Persoft's *Referee* program has been a wonderful addition. It consists of three programs that allow you to activate/deactivate TSR's either from the command line by invoking *REFEREE.COM* with certain parameters or from a menu-driven TSR (*SIDELINE.COM*).

A program can be activated or deactivated from the command line or batch file. For example, *REFEREE -BW* deactivates Traveling Software's *Battery Watch* program, and *REFEREE +BW* reactivates it. *REFEREE #1400CLK* unloads the 1400LT clock program, if it was the last program loaded into memory. *REFEREE ##* unloads every program in memory back to *REFWATCH.COM*.

For the TSR version, you load a "watchdog" program (*REFWATCH.COM*) before you load other TSR's. I load it immediately after the *AUTOEXEC.BAT* section displayed above. *REFWATCH* pays attention to every program loaded after it. If you wish to deactivate a program, call the TSR *Sideline* with *ALT-/,* cursor through the list of programs loaded into memory, and toggle any or all of them off and on with the space bar.

*Referee* helps avoid confusion among programs. I use Broderbund's *MemoryMate* extensively in the office. This text-based database lets me keep all kinds of notes at my fingertips. You invoke it by pressing *ALT-Z*, a combination I like because the two keys are close together. Another favorite application, however, uses *ALT-Z* to call up its help screen. Instead of the help screen for that program, I was getting *MemoryMate*. So now I temporarily deactivate *MemoryMate* by including *REFEREE -MEMO* (*MEMO* is the command name for *MemoryMate*) in the batch file that loads the other application. The last command in the same batch file is *REFEREE +MEMO*, which reactivates *MemoryMate* after exiting the application.

When using *RBASE* for DOS, I need all the memory I can get, so I load it with a batch file whose first command is *REFEREE ##*. This command clears out everything before loading *RBASE*.

I experimented with several shareware and public domain TSR managers and haven't found anything that pleases me more than *Referee*. It's a winner!

### WORDPERFECT AND THE LITEDRIVE II

My new hard disk overcomes one other limitation of the 1400LT—the inability to upgrade with expanded or extended memory. The hard drive controller board occupies the only slot in the machine.

We use *WordPerfect 5.0* and its accompanying *Library* programs in our offices. I like using the shell, but couldn't move from one program to another without tedious unloads and loads because of memory limitations. *WordPerfect's Library 2.0* lets you use your hard disk as simulated memory, swapping programs in and out from the disk as you move from one to the other with keyboard macro commands. Loading the shell with *SHELL /V-C:\LIBRARY* lets me swap files out to my *LIBRARY* directory. The shell erases its extra swap files if you exit it properly with *F7*.

I now can run *WordPerfect's Shell* program with the appointment calendar, calculator and *WordPerfect 5.0* in memory (or simulated disk memory). In addition, I keep resident in memory *MemoryMate*, *PC Magazine's Cardfile* (address Rolodex), *Battery Watch*, *StopLite*, and *DOSEDIT* (a command line editor). I've packed this little white laptop with about everything it can hold. The resulting experience continues to be a pleasant one.

Jim Berg is Dean of Students at Bob Jones University in Greenville, SC and is an avid computer hobbyist. Tom Berg is PC Coordinator for the University Electronics Department at Bob Jones University.



COMPATIBILITY: Tandy 600, 1400LT (untested).

# AUDIT 600

## How to manage your utility bills with the Tandy 600.

By Dennis C. Rogers

*Utility Bill Audit* is a versatile program that lets you check your electric, gas, water, and phone bills for accuracy, or split the costs of these bills among the people living in your household. Also, if you are interested in energy savings (and who isn't these days?), you can monitor your daily electric and gas consumption with this program.

The program listed will run on a Model 600 laptop, and you can easily modify it to run on any GWBASIC or other Microsoft BASIC interpreter or compile it for speedier results.

### PROGRAM MODIFICATIONS

Before you *RUN* this program, you must have a thorough understanding of how each bill is calculated in the program. First, a particular bill is split up according to the values (2,1,2,4) given in the *DATA* statement in line 1720. These values are assigned to the variable *N(X)* and represent the number of people who must pay for each bill. In its present form, the program assumes that two people pay for the electric bill, one pays for the gas bill, two pay for water, and four pay for the phone bill. However, it's unlikely that these numbers will correspond to the financial arrangements in your household. So be sure to substitute the appropriate values in this line before you continue. Of course, if one person pays the bills in the household, replace all four numbers in line 1720 with 1,1,1,1.

## You can easily modify it to run on any Microsoft BASIC

Since the program works on the actual costs of your utility bills based on local rates, you have to provide certain information about these rates before you can run the program. This information is *READ* in lines 560 and 580 from the *DATA* statements in lines 1730-1760.

Notice that the first three *DATA* statements in this sequence have nine entries and apply to the electric, gas, and water bills respectively. Let's consider line 1730 as an example. The first entry in this line is the name of the utility (*ELECTRIC*) for which the rates that follow apply. The second entry is the unit of measurement for that particular utility (*KWH* for kilowatt hours). The next entry is the minimum service charge for the utility (\$5.40 for electricity). The fourth entry is the tax rate based on the sum of the service charge and the rate charge (0 percent for electric use). These first four *DATA* entries are *READ* in as *A\$(1)*, *B\$(1)*, *M(1)*, and *Z(1)*, respectively.

At this point, the numbers begin to get a little confusing, so

```

10 '-----
   '-----
20 '      B I L L   A U D I T   P R O G R
   A M
30 '
40 '      E A S Y   W A R E   P R O D U C
   T S
50 '
60 '      P.O. Box 218778
   Houston, Texas      77218-877
8
70 '
80 ' Author - Dennis C. Rogers
90 ' Version - 1.02
100 ' Date - 24 Nov 1988           Model 6
00 Version
110 '

```

```

120 ' COPYRIGHT 1988  EASY WARE PRODUCTS
130 ' A L L   R I G H T S   R E S E R V E
   D.
140 '-----
   '-----
150 '
160 '
170 DIM A$(4),B$(4),L1(3),L2(3),M(4)
180 DIM R1(3),R2(3),R3(3),W(50),Z(4),N(1
   0)
190 GOSUB 1790: GOTO 520
200 A1=0
210 PRINT "Enter Adjustments to Bill (+
   or - , '0' When Done)"
220 IF IX>12 THEN IY=3:IYY=15:IC=1:ICC=7
8:GOSUB 350:IX=0 'ALLOW 12 ENTRIES
230 INPUT E
240 A1=A1+E:IX=IX+1
250 IF E=0 THEN GOTO 270
260 GOTO 220           'LOOP
270 GOSUB 430           'SKIP 2 LINES

```

continued

*This bill audit program lets you check and monitor your utility bills—and keep your roommates honest!*

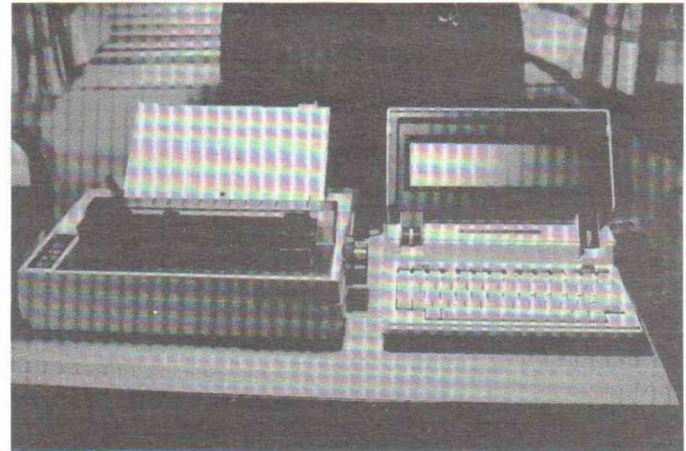


```

280 GOSUB 470 'PROMPT TO EXIT
290 RETURN
300 CLS
310 RETURN
320 PRINT " ";A$(X);" Bill (Cont') "
330 RETURN
340 ' Programmable Cursor Controlled - Clear Screen
350 FOR L=IY TO IYY
360 FOR C=IC TO ICC
370 LOCATE L,C
380 PRINT " ";
390 NEXT C
400 NEXT L
410 LOCATE IY,IC
420 RETURN
430 FOR I= 1 TO 2
440 PRINT
450 NEXT I
460 RETURN
470 PRINT "Enter (X) to Exit";
480 INPUT C$
490 IF C$="X" OR C$="x" THEN 590
500 GOSUB 300
510 RETURN
520 FOR I= 1 TO 4
530 READ N(I)
540 NEXT I
550 FOR I= 1 TO 3
560 READ A$(I),B$(I),M(I),Z(I),L1(I),L2(I),R1(I),R2(I),R3(I)
570 NEXT I
580 READ A$(4),M(4),Z(4)
590 GOSUB 300:IX=20
600 LOCATE 2,IX:PRINT " Audit 600 - Utility Bill Auditor"
610 LOCATE 3,IX:PRINT " By Easy Ware Products"
620 LOCATE 4,IX:PRINT "Copyright 1988, ALL RIGHTS RESERVED"
630 LOCATE 5,IX:FOR I=1 TO 36:PRINT CHR$(205);:NEXT I
640 LOCATE 7,IX:PRINT " 1. Electric Bill"
650 LOCATE 8,IX:PRINT " 2. Gas Bill"
660 LOCATE 9,IX:PRINT " 3. Water Bill"
670 LOCATE 10,IX:PRINT " 4. Phone Bill"
680 LOCATE 11,IX:PRINT " 5. All the Above"
690 LOCATE 12,IX:PRINT " 6. Exit"
700 LOCATE 14,25:PRINT " Choose an Option ";
710 INPUT P
720 IF (P<1)+(P>6) THEN GOTO 710
730 ON P GOTO 1190,1220,1250,1280,1670,1770
740 GOSUB 300 'CLS
750 PRINT " ";A$(X);" Bill"

```

continued



Audit 600, a program that enables you to check the accuracy of your utility bills, is designed for use on the Tandy 600 portable computer.

read carefully. The next two numbers are cut-off limits for each electric rate and are represented in the program by L1(1) and L2(1). The last three numbers are the actual rates charged per KWH use for each level of use R1(1), R2(1), and R3(1) in the program. Thus, the program is presently set up so that the rate charged for electricity is \$0.0495 for the first 350 KWH, \$0.0565 for the next 950 KWH (i.e., 1300 minus 350), and \$0.0541 for any usage exceeding 1300 KWH.

The DATA statement in line 1760 is easier to follow and includes this: the utility (PHONE), the minimum service charge (\$13.50), and the tax rate on the service charge and long distance calls (3 percent).

So get out your most recent bills and read off the various rates (per KWH for electric, per CCF or hundred cubic feet for gas and water). If the rates are not given on a bill, contact the utility company to get a schedule for the latest rates. Then just substitute your local rates for those in the DATA statements in lines 1730 to 1760. In this way, you can compute or audit your utility bills.

### ANALYZING THE PROGRAM

After inserting the correct rates, RUN the program. You will then be asked which utility bill you wish to check. The first three menu choices are electric, gas, and water. Bills for these three utilities are all calculated in the routine beginning at line 740. Let's look at an electric bill as an example.

When the routine at line 740 is executed, you will be required to INPUT the present and previous meter readings. These values can be read directly from your latest electric bill. Next, you must INPUT the number of days in the billing period. Then you will be asked to INPUT any adjustments to the bill, either positive (connection fees, previous balances, or other debits) or negative (credits).

The program next calculates the amount of electricity consumed for the given period (defined as U in line 890). Then, depending on the value of U relative to the two rate limits, L1(1) and L2(X) in lines 910 and 920, an amount owed (T) before tax and adjustments will be calculated (lines 930, 950 and 970). Next, it determines the tax on this amount (T1). And finally in line 1000, it calculates a total electric bill (T3)—the sum of the minimum charge, usage cost, tax, and adjustments.

The results are then PRINTed on the screen with provisions for formatting the output to two places past the decimal. Any numbers in the third place past the decimal are simply dropped. If you prefer rounded numbers, you could easily modify the program to achieve that.



## APPLICATION

### OVER 200 PROGRAMS AND INFORMATION FILES FOR YOUR 100/102/200/600

Your Choice, \$5 each  
or any five for \$20, postage paid.  
Available on cassette, Tandy 3.5",  
Chipmunk, or MS-DOS disks

Send \$5 for catalog  
on disk or cassette (specify)

Tony Anderson  
P.O. Box 60925  
Reno, NV 89506

Circle 140 on reader service card.

The routine beginning at line 740, as mentioned, also calculates the gas and water bills. These are based on the rates *READ* from the *DATA* statements in lines 1740 and 1750. Notice the sets of large numbers (i.e., 99999) in line 1740. The rates for gas where I live are the same, regardless of the amount used. By using large numbers here for the cut-off limits, *L1(2)* and *L2(2)*, for this utility, you aren't likely to exceed these amounts (see lines 910 and 920). Thus, the charge for this commodity will always be based on the first rate, or *R1*.

The rates for water, as *READ* from the *DATA* statements in line 1750, are based on a single cut-off limit *L1(3)* of 1000 CCF. For less than this, it charges you a usage rate *R1(3)* of \$0.144 per CCF. If water use exceeds 1000 CCF, it charges you a second rate *R2(3)* of \$0.160. Again, using a very large number (99999) for the second

cut-off limit *L2(3)* assures that the overall usage cost is based on only two rates.

#### INTERPRETING THE PHONE BILL

The program checks phone bills in a separate routine beginning at line 1280. This routine initially *INPUTs* adjustments to the bill in the same way as with the electric, gas, and water bills. Next, the person responsible for each long distance charge is required to *INPUT* the amount of each long distance call. A separate routine (lines 1440-1550) allows you to correct any typing mistakes. Finally, it displays the amount owed by one person.

The portion of the phone bill that each person must pay is the sum of his or her long distance tolls, a proportional amount of both the service charge and the billing adjustments, and a proportional amount of the tax levied on the service and long distance calls. Again, if only one

```

760 PRINT
770 PRINT "Previous Meter Reading"
780 INPUT E1
790 PRINT "Present Meter Reading"
800 INPUT E2
810 PRINT
820 PRINT "Input Days in the Billing Per
iod"
830 INPUT D
840 GOSUB 430 'SKIP THREE LINES
850 GOSUB 470 'CONTINUE?
860 GOSUB 300 'CLS
870 GOSUB 320 'TYPE OF BILL DESIRED
880 GOSUB 200 'ENTER ADJUSTMENTS
890 U=E2-E1
900 Y=U/D
910 IF U>L2(X) THEN GOTO 970
920 IF U>L1(X) THEN GOTO 950
930 T=M(X)+R1(X)*U
940 GOTO 980
950 T=M(X)+R1(X)*L1(X)+R2(X)*(U-L1(X))
960 GOTO 980
970 T=M(X)+R1(X)*L1(X)+R2(X)*(L2(X)-L1(X))
+R3(X)*(U-L2(X))
980 T1=T*Z(X)
990 T2=T+T1
1000 T3=T2+A1
1010 GOSUB 300 'CLS
1020 GOSUB 320 'TYPE OF BILL DESIRED
1030 PRINT "Use for the Period is ";INT(
U*100)/100;" ";B$(X)
1040 PRINT
1050 PRINT "Use/Day is ";INT(Y*100)/100;
" ";B$(X);" or $";
1060 PRINT INT(T2/D*100)/100"/Day Inclu
ding Tax"
1070 PRINT
1080 PRINT A$(X); " Bill:"
1090 PRINT " W/Out Tax :$";INT(T*100)/1
00
1100 PRINT " Tax is :$";INT(T1*100)/

```

continued

```

100
1110 PRINT " Adj'ts :$";A1
1120 PRINT
1130 PRINT " *Total* :$";INT(T3*100)/
100
1140 IF N(X)=1 THEN GOTO 1160
1150 PRINT "Split ";N(X); " Ways:$";INT(T
3/N(X)*100)/100
1160 PRINT
1170 GOSUB 470 'CONTINUE?
1180 RETURN
1190 X=1
1200 GOSUB 740
1210 GOTO 590
1220 X=2
1230 GOSUB 740
1240 GOTO 590
1250 X=3
1260 GOSUB 740
1270 GOTO 590
1280 GOSUB 300
1290 X=4
1300 PRINT " ";A$(X); " Bill"
1310 GOSUB 200
1320 FOR K=1 TO N(X)
1330 I=1
1340 PRINT "For Person #";K;" ,Enter Char
ge for each LD Call (Enter '0' When Done
)"
1350 IF IX>12 THEN IY=2:IYY=15:IC=1:ICC=
78:GOSUB 350:IX=0 'ALLOW 12 ENTRIES
1360 INPUT W(I)
1370 IF W(I)=0 THEN GOTO 1400
1380 I=I+1:IX=IX+1
1390 GOTO 1350 'LOOP
1400 GOSUB 300 'CLS
1410 FOR J=1 TO I-1
1420 IX=CSRLIN
1430 IF IX>12 THEN IY=1:IYY=15:IC=1:ICC=
78:GOSUB 350 'ALLOW 12 ENTRIES
1440 PRINT "Person #";K;" ,Call #";J;" :

```

continued



person in the household foots the bills, the last number in line 1720 should be 1.

### CONCLUSION

In addition to enabling you to catch billing errors and helping you to divide up household bills easily, this program can help you monitor your costs. If you add an energy-saving device that is supposed to save 10 percent of your total electric bill, take a meter reading when you install it and verify the savings with a later reading. You can also project weekly, monthly, and yearly savings for any utility in this way.

I fully intend to support the Model 600 so long as I get enough support from the users of this machine. In the meantime, I will be writing more articles on the Tandy Model 600, specifically. But note that these programs should work with little or no change on almost all PC's and laptops

in the marketplace. I fully believe this machine has much more potential than the models before it.

The AUDIT 600 program is available on 3.5-inch Tandy Model 600 format for \$10. It is also available on 5.25-inch or 3.5-inch PC-compatible format for the same price. It is available by writing to the address below specifying the article title with money order enclosed and return address. Easy Ware Products (CLUB 600), P.O. Box 218778, Houston, Texas 77218-8778; (713) 933-0542

*Dennis Rogers is president and owner of Easy Ware Products. He is also president of Club 600, and editor/publisher of the Club 600 Newsletter. He talks with a southern accent and he's friendly.*



## FANTASY! ACTION! INTRIGUE!

### Triple Adventure Disk:

Spider Mountain,  
Lost Dutchman's Gold,  
and CIA Adventure.

All three on TPDD or MS-DOS  
disk for only \$24.95

(US shipping and handling  
included, Foreign add \$3).

### Programmer's Guild

P.O.Box 66

Peterborough, NH 03458

Circle 130 on reader service card.

```
$";W(J);" Is this Correct (Y/N) - ";
1450 INPUT C$
1460 IF C$="Y" OR C$="y" THEN GOTO 1490
1470 PRINT "Type in Correction - ";
1480 INPUT W(J)
1490 NEXT J
1500 GOSUB 300
1510 GOSUB 320
1520 T=0
1530 FOR J=1 TO I-1
1540 T=T+W(J)
1550 NEXT J
1560 PRINT "Service:      $";INT(M(X)/N(X)
*100)/100
1570 PRINT "LD Calls:      $";T
1580 PRINT "Adj'ts :      $";INT(A1/N(X)*1
00)/100
1590 T1=T+INT(M(X)/N(X)*100)/100
1600 T2=INT(T1*Z(X)*100)/100
1610 PRINT "Total Tax:      $";T2
1620 PRINT "Total Bill: $";T1+T2+INT(A1/
N(X)*100)/100
1630 GOSUB 430
1640 GOSUB 470
1650 NEXT K
1660 GOTO 590
1670 FOR F=1 TO 3
1680 X=F
1690 GOSUB 740
1700 NEXT F
1710 GOTO 1280
1720 DATA 2,1,2,4
1730 DATA ELECTRIC,KWH,5.40,0,350,1300,
.0495,.0565,.0541
1740 DATA GAS,CCF,4.05,0,99999,99999,.49
541,0,0
1750 DATA WATER,CCF,3.26,0,500,99999,.14
4,.160,0
1760 DATA PHONE,13.50,.30
1770 CLS:PRINT "Exiting to HHOS. Wait fo
```

continued

```
r Menu ...":SYSTEM
1780 REM ----- SIGNON MESSAGE ---
-----
1790 CLS
1800 MSGL=3
1810 MSG1$="      Bill Audit Program"
1820 MSG2$="      Presented By"
1830 MSG3$="      Easy Ware Products"
1840 MSG4$="      P.O. Box 218778"
1850 MSG5$="      Houston, Texas 77218-8778"
1860 KEY OFF:X=1:Y=15:V=13:W=53
1870 LOCATE X,Y:PRINT CHR$(201);:FOR I=1
TO W:PRINT CHR$(205);:NEXT I
1880 PRINT CHR$(187)
1890 FOR J= X+1 TO V
1900 LOCATE J,Y:PRINT CHR$(186);:PRINT S
PC(W);:PRINT CHR$(186)
1910 NEXT J
1920 LOCATE J,Y:PRINT CHR$(200);:FOR I=
1 TO W:PRINT CHR$(205);:NEXT I
1930 PRINT CHR$(188)
1940 GOSUB 1960
1950 FOR K= 1 TO 8000:NEXT K:RETURN
1960 LOCATE MSGL,28:PRINT MSG1$:MSGL=MSG
L+1
1970 LOCATE MSGL,28:PRINT MSG2$:MSGL=MSG
L+1
1980 LOCATE MSGL,28:PRINT MSG3$:MSGL=MSG
L+1
1990 LOCATE MSGL,28:PRINT MSG4$:MSGL=MSG
L+1
2000 LOCATE MSGL,28:PRINT MSG5$:MSGL=MSG
L+1
2010 LOCATE MSGL,28:MSGL=MSGL+1
2020 LOCATE MSGL,31:PRINT "      Copyright
1988":MSGL=MSGL+1
2030 LOCATE MSGL,31:PRINT "      All Right R
eserved":MSGL=MSGL+1
2040 LOCATE MSGL,31:PRINT "Model 600 Ver
sion 1.02"
2050 RETURN
```

End of listing.



# Traveling Software. A Powerful Laptop Classics



Your chance to save on quality items from our popular collection of Tandy Model 100/102 & Model 200 software and accessories.

ITEM	ITEM NO.	REG. PRICE	SALE *
<b>SOFTWARE EXTRA ORDINAIRE</b>			
Ultimate ROM II Four programs: ROM-View 80, T-Word, Idea, and T-base.	R1-UR-01 (M100) R2-UR-01 (M200) NE-UR-01 (NEC)	\$199.95	\$ 99.95
Sardine 3.5" Disk Electronic spelling checker with pocket dictionary.	R1-SD-01 (M100) R2-SD-01 (M200) NE-SD-01 (NEC)	\$ 99.95	\$ 59.95
Sardine ROM Chip Includes T-Word word processor.	R1-SD-02 (M100) R2-SD-02 (M200) NE-SD-02 (NEC)	\$169.95	\$ 99.95
Sardine 4 Chip Set Put the Dictionary on Chips!	R1-SD-03	\$199.95	\$129.95
TS-DOS 4.0 Disk Operating system for your portable disk drives.	R1-TS-01 (M100) R2-TS-01 (M200) NE-TS-01 (NEC)	\$ 69.95	\$ 49.95
TS-DOS 4.0 ROM Chip Save your RAM!	R1-TS-02 (M100) R2-TS-02 (M200) NE-TS-02 (NEC)	\$ 99.95	\$ 59.95
<b>ESSENTIAL ACCESSORIES</b>			
Padded Cordura Carrying Case For your Model 100/102 or portable printer	AC-BG-06	\$ 29.95	\$ 9.95
3.5" Disk Wallet Carries 8 diskettes.	AC-DW-02	\$ 9.95	\$ 6.95

All items above are limited to supplies on hand. Offer expires April 30, 1989  
SHIPPING AND HANDLING (U.S.) Surface \$5.00 / Air (2nd Day) \$8.00



BY MAIL

Send Name, Address,  
Order Number, and Method  
of Payment.



BY PHONE

Credit Card/COD Orders  
7 Days/24 Hours  
1-800-343-8080.  
In Washington Call:  
206-483-8088.



BY FAX

Send Your Completed  
Purchase Order To  
Traveling Software via  
Facsimile Transmission  
206-487-1284  
24 Hours-7 Days

Traveling Software

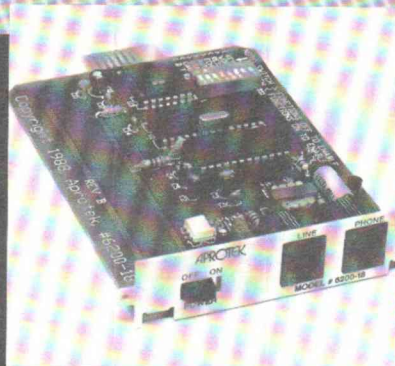


Dept P-WW2

18702 North Creek Parkway • Bothell, WA 98011



# Connection For Your Tandy 100.



**APROTEK MINIMODEM-T**

A powerful, affordable modem for your Tandy 1400 LT.

The Aprotek Minimodem-T gives you the easiest access to telecommunication possible. It consumes one-sixth the power of a Tandy internal modem when in use and can be switched off when not in use. Tandy modems always draw current from your battery. The Minimodem-T weighs less than four ounces and has a two-year warranty. It is fully compatible with the Hayes AT command set. It operates at 1200 baud in either Bell 103/212A or CCITT V.21 and V.22 modes (switch selectable). Features include Auto Answer, Auto Dial, Auto Redial and Full Duplex communications.

Aprotek Minimodem-T .....\$119.95

When you're up against hardwired phones, the acoustic coupler can be a lifesaver. Allows you to use your modem with either round or square handsets. A must for the laptop on the go!

Acoustic Coupler .....~~\$49.95~~  
\$34.95

**\*Special Order Now !**  
(limited time offer).



**MAC-DOS II**

**Connects Your Mac to Your Laptop or Tandy/Purple Computing Portable Disk Drive.**

MAC-DOS II gets your Mac and laptop "talking" by the connection of our three-connector cable. It lets you read, edit and print files created with your laptop as easily

as regular Macintosh files. Transfers files between your Tandy M100/102/200 or NEC PC-8201/8300 laptop and any version of the Macintosh at speeds up to 19,200 baud instantly. Also includes a Tandy disk drive adapter for optional direct disk access.

MAC-DOS II with cable .....~~\$129.95~~  
\$109.95



**LAP-DOS II**

**Connects Your IBM Compatible PC to a Tandy M100/102/200, NEC PC-8201/8300 or Tandy/Purple Computing Disk Drive.**

LAP-DOS II lets your IBM compatible (including PC, XT, AT and PS/2) transfer files from your laptop at speeds up to 19,200 baud using our specially designed three-connector cable. Also included is a Tandy disk drive adapter for direct disk access (either 100 or 200K format). LAP-DOS II has rename, view and delete functions and supports sub-directories on IBM or compatible PCs.

LAP-DOS II with cable .....~~\$129.95~~  
\$99.95

**ORDER  
TOLL FREE U.S.  
1-800-343-8080  
in Washington State  
206-483-8088  
Visa, MC, AMX  
Accepted**



# Five Months With Twenty Megs

Experience has provided a compendium of  
useful tips for the 1400LT hard drive.

By Jim Berg

**A**uthor Stephen Lankton allowed us to commiserate with him as he tried to install CMS Enhancements' twenty-megabyte LiteDrive II hard disk in his Tandy 1400LT (*Portable 100*, Oct. '88). My drive's serial number is 000041, so it is one of the earliest ones shipped. And I was installing mine about the time his article was published, but, unaware of *Portable 100* then, I couldn't take advantage of his experience. Fortunately, I didn't have the same frustrations. My brother Tom, a computer technician, installed my drive without a hitch. I even had DOS 3.2 from a Tandy 1000SX, so when I couldn't format the hard disk with the 1400LT DOS, I immediately had a solution. I've been using it for five months now and have had a few struggles of my own. The effort was worth it, however, and I wouldn't want to be without my LiteDrive II.

My first hitch came when I tried to back up my hard drive with *Fastback Plus*. The program estimated the number of disks needed for the backup (forty-five disks) but gave me strange program errors when I actually tried the backup process. Technical support at 5th Generation was courteous but provided no answers. I next called Dahn Lee, the LiteDrive's designer, at CMS Enhancements. He referred me to Tandy's product manager who oversees the Tandy 1000 product line. He explained that the BIOS in the 1400LT is a proprietary one and could give problems with a backup program that bypassed DOS (which *Fastback Plus* does). He said the BIOS still thinks it is servicing drive B. I phoned this new information back to 5th Generation and went looking for a backup program that used DOS. I found one called *Diskpack* on a local BBS. The demoware version backs up and verifies data, but does not restore it. I obtained a registered version and couldn't be happier. It backs up thirteen megabytes onto eighteen 3.5-inch disks.

The "Mystery of the Missing Drive B" can continue to be a

nasty one, however. If a program tries to access drive B, the computer goes "bye-bye." To counteract this, I include *ASSIGN B=C* in my *AUTOEXEC.BAT* file so that any subsequent calls to drive B are transferred to the hard disk.

## MORE POWER TO YA'

Once the LiteDrive II is installed, it doesn't take long for the power drain to make the A/C adapter hot enough to fry an egg. Mr. Lee at CMS recommended that I build or purchase a separate power supply that provides twelve volts at 2.5 to 3 amps. My brother went to work again and came up with just the ticket. The schematic in Figure 1 is the result. He installed a one-eighth-inch phone jack in the back panel just above the external keyboard jack. I drilled another hole in the rear plastic flip-up panel just like the original power adapter hole so the new power supply could be plugged in with the back panel in place.

When the power supply is plugged in, the jack disconnects the battery. A diode across the jack terminals lets the battery jump back into action in case the power supply should lose power or get unplugged from the computer. Table 1 is the parts list for the power supply. This is not a project for the faint-hearted or the novice. If you can install the drive yourself, you probably can build the power supply, however. I keep the power supply at home where I use *WordPerfect* and *RBASE for DOS* quite extensively. At the office, where I use my 1400LT mainly for desktop organizing via *WordPerfect Library*, I use the regular charger and try to keep track of battery drain with *Traveling Software's Battery Watch*. Version 1.0G of the program just came in the mail and supports the 1400LT hard drive better than earlier versions. *Traveling Software's* support staff recommends adding 800 (ma) to the *HI* and *LO* system switches. I load the program for use with the hard disk as follows:

BW LO=928 HI=945 AL=10

## Manufacturer's Specifications

*Battery Watch*—\$39.95  
Traveling Software  
18702 North Creek  
Parkway  
Bothell, WA 98011  
(800)343-8080 or in WA  
(206)483-8088

*Diskpack*—Demoware  
(\$49.00 registration)

Biologic Company  
11982 Coverstone Hill Circle  
Suite 1622  
Manassas, VA 22110  
(703) 368-2949

*MemoryMate*—\$69.95  
Broderbund Software, Inc.  
17 Paul Drive  
San Rafael, CA 94903-2101  
(800)527-6263

*Referee*—\$69.95  
Persoft, Inc.  
465 Science Drive  
Madison, WI 53791  
(608)273-6000

*WordPerfect 5.0*—\$495  
*WordPerfect Library*—\$129  
WordPerfect Corp.  
1555 North Technology Way  
Orem, UT 84057

(800)222-9409

*RBASE for DOS*—\$700  
Microrim, Inc.  
3925 159th Ave. N.E.  
P.O. Box 97022  
Redmond, WA 98073-9722  
(206)885-2000



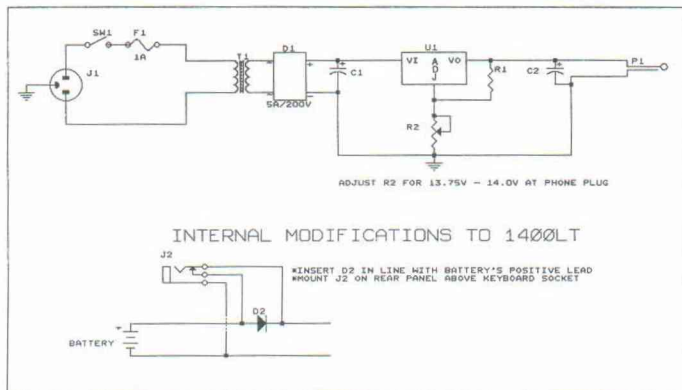


Figure 1. The plans for creating an AC power supply for the 1400LT. See Table 1 for a description of the parts needed.

The AL=10 tells *Battery Watch* to ring its alarm ten minutes before the program reaches the "empty" reading. I found that the status screen (invoked by pressing ALT-SHIFT-B, F3, F5) accurately registers the percentage of use for my floppy drive. It would not, however, register any use of my hard drive. Another call to Traveling Software revealed that *Battery Watch* polls the computer's systems every 2.85 seconds to take its readings. The CMS drive's access time is generally less than a tenth of a second, and the program often misses it.

To test if this was really my problem, I set up a batch file with several calls to CHKDSK (with calls to DIR between each CHKDSK). My *Battery Watch* status screen still registered no drive activity. To this, Traveling Software replied that the program seems to be working accurately on CMS drives being marketed by Tandy but not on the drives CMS sells for itself. CMS told me that Tandy makes some internal changes to the power supply when they install drive at a Tandy Service Center. Perhaps these changes account for the different effects these drives have on *Battery Watch*.

In spite of this, *Battery Watch* is working quite accurately for me. Apparently, my use of the hard drive when on battery power corresponds quite closely to the drain represented by the 800ma addition. I am generally quite pleased but will be even more excited when Traveling Software finds out how to read the percentage of hard drive use accurately. These folks provide professional products and professional service. I'm confident they will eventually come up with an upgrade that will work for us CMS drive users.

Speaking of upgrades, Tandy recently sent me a disk with a new FORMAT.COM program and a new version of SL.COM (StopLite ver. 1.12). I simply left my name and address with Radio Shack Customer Service on the PC-LINK network and requested the updates.

The new version of StopLite is not memory resident, however. Since I like to change the time-out values frequently depending on whether I am using the battery or the extra power supply, I like to be able to call up the terminate-and-stay-resident (TSR) version and change the values at will, rather than waiting for the program to load from disk.

## SCREEN HELPS

I found a useful clock program on PC-LINK as well. Most clocks don't work on the 1400LT's screen—again, because they bypass DOS calls. This one doesn't bypass DOS and seems to work well. I also picked up several other screen utilities there:

**SB14.COM**—This program turns off the backlit screen after user-defined periods of inactivity, but does not allow the power consumption to drop to "standby" levels. The biggest advantage is that since the power remains higher, it does not lock the COM

port when your screen blanks out. Ever had your screen blank out in the middle of a long download? This one's a goody!

User-selected parameters tell the program to scan the keyboard, video calls to the BIOS, or both.

**BLOFF.COM**—Turns the backlit screen off. CTRL-ALT-F11, CTRL-ALT-F12 or CTRL-ALT-INS will reactivate the light.

**VIDM.COM**—This third program checks to see which display is currently active—external CRT or LCD—and is useful if you need to determine which display is active so you can call the MODE command with appropriate parameters.

SW1	SPST power switch
F1	1-amp fuse with holder
T1	12V/3A transformer
C1	2200µF/50V electrolytic capacitor
C2	1µF/50V tantalum capacitor
U1	LM338K adjustable voltage regulator
R1	120-ohm, 1/4W resistor
R2	5K-ohm potentiometer 10-turn preferred
D1	5A/200V bridge rectifier
D2	1N5402 or equivalent
J1	AC line cord
J2	1/8-inch phone jack with switching contacts
P1	1/8-inch phone plug

Table 1. The parts needed to build your own external AC power supply for your Tandy 1400LT with a hard drive.

## TIPS FOR THE RAM DISK

The extra 128K that Tandy makes available for a RAM disk was a thoughtful addition. Once the hard drive is installed, the RAM disk becomes drive D. I use AUTOEXEC.BAT to load that 128K with all kinds of goodies.

After setting the path to look for programs in the RAM disk first, and after clearing the screen, I display a brief lost-and-found message, set the \COMSPEC environment to look for COMMAND.COM in drive D, set the cursor prompt message to display the current directory (i.e., PROMPT \$P\$G) and then load several useful utilities into drive D. Once in the RAM disk they pop into action instantaneously since they are called from memory, not from the disk.

## ECHO OFF

```
PATH=D:\C:\DOS;C:\BATCH;C:\UTILITY;C:\LIBRARY;
CLS
```

```
ECHO IF FOUND, RETURN TO:
```

```
ECHO JAMES A. BERG
```

```
ECHO 555 MAPLE BLVD.
```

```
ECHO ANYTOWN, U.S.A.
```

```
ECHO (555) 555-5555
```

```
ECHO REWARD
```

```
SET COMSPEC=D:\COMMAND.COM
```

```
PROMPT $P$G
```

```
COPY C:\DOS\COMMAND.COM D:\
```

```
COPY C:\DOS\MORE.COM D:\
```

```
COPY C:\UTILITY\DDIR.COM D:\
```

```
COPY C:\UTILITY\MEMORY.COM D:\
```

```
COPY C:\UTILITY\WHERE.COM D:\
```

128K isn't much memory, but it is useful for custom tricks like these. I also use it when a program, such as a spreadsheet, uses several overlay files. By loading the spreadsheet with a batch file that copies the .OVL files to drive D and changing the program's set-up options to look for them there, I do not notice any appreciable delay when the program switches from one overlay to the next. Of course, they must all fit in 128K for this to be helpful.

continued on page 13



## NEW PRODUCTS

### TMN ASSEMBLER

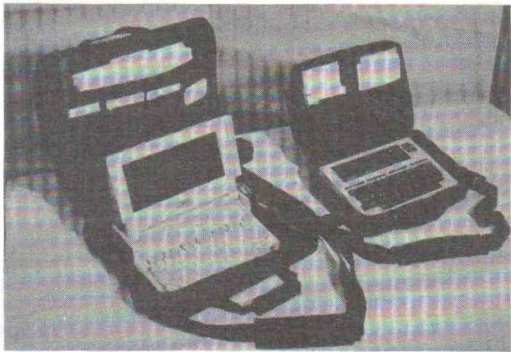
Tri-Mike Network East has acquired all rights to the HSI Assembler for Tandy and NEC notebook computers.

The TMN Assembler requires less than 3K of RAM and is relocatable. Assembles source code from any file or device, thus eliminates "limited memory" problems. Accepts data in hex, decimal, or ASCII. Creates a ready-to-run .CO file directly on the menu or an optional trial assembly. Six built-in macros make programming even easier.

Output all or any portion of the assembled listing to screen or printer, with optional user-inserted pauses. A 56-page manual covers the use of the assembler, the 8085 instruction set, sample programs, information on ROM calls, and a map of reserved high memory.

Available on cassette and priced at only \$35.95 complete (includes shipping and handling). For more information, contact Granite Street Portables, P.O. Box 651, Peterborough, NH 03458-0651. Or circle #73 on your Reader Service card.

### TWO TOP CASES FROM TARGUS



*Rugged, lightweight, and versatile Targus cases—well-crafted protection for your laptop and accessories. Comfortable to carry and good looking, too.*

Targus, Inc. the leading manufacturer in carrying cases for portable and laptop computers, offers two fine cases for Tandy laptop and notebook users—the Lappac 2 Deluxe and the Lappac 3.

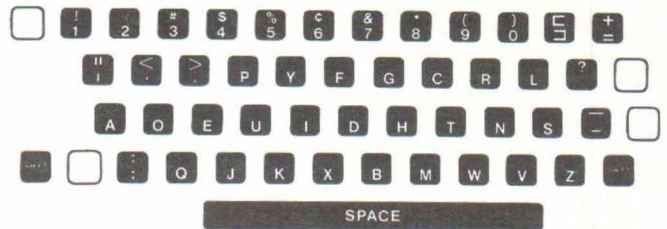
Rugged "Zilicone" treated 840 Denier Oxford Nylon outer shells provide unsurpassed durability and a non-abrasive, water-repellant, scuff-resistant surface. Padding is provided by impact absorbing, high-density, closed-cell foam covered by a protective inner lining. A 200-lb. burst strength webbing is stitched to nautical standards, reinforced with industrial rivets on all stress points. Special non-skid, shock absorbing rubber feet are securely glued and stitched to the bottom of each case. Targus products use free running, self-healing nylon zippers plus molded positive close, non-corrosive fasteners. And all Targus cases feature cushioned non-slip shoulder pads and foam padded hand grips for user comfort.

The Lappac 2 Deluxe, ideal for the Tandy 1400LT, incorporates a carrying case, a briefcase, and a portfolio into a single portable system. The main section

accommodates essential computer equipment, together with an adjustable or removable divider to hold power supplies, cables and accessories. A separated portfolio compartment features individual disk pockets, pen holders, business card holder, and document pouch. Exterior zippered pockets provide space for notebooks, manuals, etc., and a padded, gusseted pocket holds a portable printer, modem, or a notebook computer.

The Lappac 3 for Tandy, NEC, Kyocera, Olivetti, and Cambridge notebook computers, offers the same quality materials in a smaller, more convenient configuration. An exterior 2.5-inch wide pocket with a hook-and-loop flap provides generous space for manuals, cables, power supplies, portable printers, disk drives, and other accessories. Two document pouches inside the case hold notebooks, pens, and other papers.

For more information on these and other Targus cases contact Targus, Inc., 6190 Valley View Drive, Buena Park, CA 90703 (714) 523-5429. Or circle #74 on your Reader Service card.



*The scientifically designed Dvorak keyboard layout improves typing efficiency up to 90 percent while decreasing errors and fatigue. Dvorak Keyboard System software puts this "Rolls-Royce" of keyboards on your Tandy or NEC notebook computer.*

### DVORAK HAS A NEW DVERSION

Tri-Mike Network East has released a versatile new, single-program version of its tried and true Dvorak Keyboard System software for Tandy and NEC notebook computers.

DKS lets notebook computers use the vastly more efficient Dvorak keyboard arrangement for faster, easier typing with far less effort than the traditional keyboard (designed in 1873!). And learning to type is much easier on a Dvorak keyboard.

Studies show that while an average typist's fingers travel about 16 miles per day, a Dvorak typist accomplishes same work with only one mile of motion. It's no wonder this fast, efficient keyboard is used by directory assistance operators, military and government agencies, and thousands of others—including the world's champion typist!

DKS requires no hardware. Installation is simplicity itself—type a single command. The Dvorak filter installs invisibly, safely and permanently, in only 300-600 bytes of RAM and works in BASIC, TEXT, TELCOM, etc.—like the machine came from the factory that way.

Here's what reviewers say:

"...makes the Model 100 into a powerful Dvorak-equipped system which you can take almost anywhere. Fantastic."—Dvorak Developments, Summer 1988

"...let me maintain my ultra high Dvorak speed and took up too little RAM to notice."—PICO, Nov. 1987

"...seems an ideal program. Laptop computers need more such software that is so easy to use and so well behaved."—Online Today, July 1987

Along with other enhancements, the new DKS is now a single program for even easier use and storage. When stored in the personal file area of a BBS or major on-line service, it's immediately available after a cold start or similar disaster while traveling.

Dvorak Keyboard System is available for \$32.95 (disk) or \$35.95 (cassette). Prices include shipping and handling. For more information contact Granite Street Portables, P.O. Box 651, Peterborough, NH 03458-0651. Or circle #72 on your Reader Service card.

### LESS TAXING EFFORT

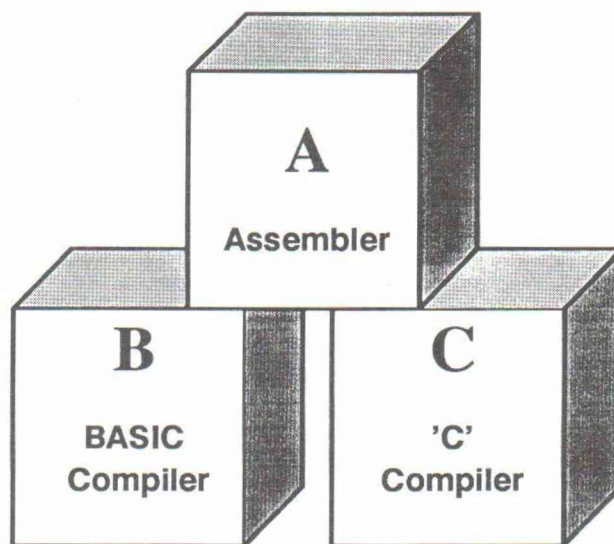
Software Versand is shipping their Model 100 WEETAX™ system of integrated programs for periodic maintenance of finances for personal income tax returns. Keep your records organized and verified. Designed to standardize your reporting format easily and quickly, WEETAX helps you avoid the year-end crunch.

The scrolling input panel is table-driven: field labels and default data come from a user-supplied, tax-category TEXT file. You specify which categories are to be supplemented with an audit trail of prompted, dated annotations. A 377-byte RAM-resident control program automatically moves supporting programs and data between RAM and disk. The paginated printout is designed for attachment to an annual IRS return and is also available as a year-to-date summary. A reset feature clears all data files but keeps the organization—all ready to begin the next calendar year.

The DVI version retails for \$44.95 (ppd); the PDD version is \$49.95 (ppd). For further information, contact Software Versand, Points West No. 158, 3131 West Cochise Drive, Phoenix, AZ 85051 (602)997-1523. Or circle #65 on your Reader Service card.



# OPTION ROM DEVELOPMENT FOR THE MODEL 100/102 IS AS EASY AS ...



These Cross Development Packages for the Model 100/102 that run on a PC or Clone will make your development project a breeze, whether you work at machine level in Assembler, produce fast maintainable code in 'C' or just want to get your BASIC program to run from an Option ROM.

## ASM 100

Package includes a Cross Assembler and linker for the Model 100/102 that allows you to create a .CO or ROMable program.

The Option ROM Library makes it possible to write and test code as .CO files and then burn the final product into an Option ROM. Manual contains detailed information on the Model 100/102 option ROM technology.

\$395.00

## RBASIC

A Basic to ROM Compiler that allows your BASIC programs to be converted so that they can be run directly out of an option ROM.

At last a simple and inexpensive solution to putting your BASIC program onto a ROM.

\$199.99

## C100

The 'C' Cross Development System is a portable, easily maintainable compromise between the slowness of BASIC and the complexity of Assembler. Complete libraries provide Telcom, Graphics, screen control and random record access.

\$695.00

## The Secrets of ROM Revealed

Concise, easy to understand manual covers in detail, previously undocumented Option ROM features of the Model 100/102. Includes listings of everything you need to call standard ROM routines from an Option ROM. IBM Diskette containing source code of key routines and a search & replace utility for text files.

\$39.95, Diskette \$10.00

Eproms, Boards, and Eprom Burners available.  
Please send check with order or we can ship COD.  
California residents add 6.5% sales tax.  
\$3.50 shipping per item inside the US.  
Rush shipping and handling charge \$15.00

### King Computer Services, Inc.

1016 North New Hampshire, Los Angeles, CA 90029. (213) 661-2063



COMPATIBILITY: Tandy 100/102

# Weetax

## A Weekly Tax (Record) Collector

by Don Wood

**N**ow that you either have gone—or will go—through the agony of preparing your tax return, what will you do to make next year's effort a little easier? Just as I ponder (again) how I might personally solve this problem, the phone rings, and I am asked if I would like to try a tax program. I think, "No, not another tax program!" But with the recent tax preparation experience still fresh in my mind, I relent. Sure, why not?

Well, this is *not* just another tax program (sigh of relief). I have tested many of those expensive and hard-to-use programs for filling out your return, but filling out the return is really the easy part. The hard part is getting all those records itemized and totaled. If you are like most people, you will throw everything—maybe—in an old shoe box until tax time, when you will try and figure out which receipt really went with what. And if you are like some other people, you will keep some record of each potentially deductible item on a pad or ledger. Of course, you still have to total them.

If you don't really like either of those options, you may like this program. It is called *Weetax*, which apparently stands for *WEEKly TAX*. The program is designed to help you in your record keeping effort by collecting the information as it happens.

### SETTING UP

Well, it sounded good to me, so I tried a pre-release copy of the program. When it arrived, I opened the twelve-page, single-sided, comb-bound manual and discovered that I needed a copy of the

*Disk Power* disk operating system (DOS). [Not anymore—see editor's note.—Ed.] I acquired one and decided to install it on my Booster Pak equipped Model 100. Well, at least I thought it was a good idea. During installation my Booster Pak muttered something too quickly for me to see and then cleared the screen and vanished into the ether.

Some of you know that strange feeling when you find yourself staring at the cold start screen. After I recovered from the initial shock, I realized that one of the nice features of the Booster Pak is that a cold start does not erase the files. So I located the Booster Pak manual, performed the magic listed therein, and everything was back to *NoRmaL* or so it appeared. To

"no problem;" it allows the same statements to work. So, I loaded the main *Weetax* program into memory and executed it. It displayed a menu of choices and then said something about *File not found*. Being familiar with *BASIC*, I looked at the program and discovered it was trying to *RUN* a program from the floppy disk. I looked on the floppy disk and could not find any *.BA* programs other than the *Weetax* main program. But, I did find a *.DO* file with the desired name. Another call to the author and I found that in order for *Disk Power* to run programs from the floppy disk, they must be in *ASCII (.DO)* form. Since my Booster Pak has no such requirement, I converted all of the *BASIC* programs from *.DO* form to *.BA* form on the disk.

Now I'm cooking with gas. I finally got a full menu (Figure 1) and things appear to be working. So let's put in some information.



Figure 1. The *Weetax* main menu shows the various options available.

make a somewhat longer story short, it wasn't. So I reached for my backups (I really did have some), formatted the Booster Pak and reloaded.

### FALSE START

After this excitement, I called the software company to see if *Weetax* could be operated without *Disk Power*. The program's author explained that *Disk Power* was used to allow the *Weetax* program to be broken into pieces (i.e., smaller programs) that load from disk as needed. He told me these programs were loaded and run by *RUN "0:filename"* statements within the programs, where *0:* specifies the disk drive.

Knowing my Booster Pak as I do, I said

the program know what categories you will be keeping track of (i.e., charities, medical etc.), the default amount that each normally incurs weekly, and whether an audit (comment) should be required. You do this by editing a file called *TAXCAT.DO* and changing, adding and deleting lines, using the format shown in the *Weetax* manual. Putting a \* beside the category name will cause a comment to be requested when amounts are entered.

Having done the editing, I again start the main program, *WEETAX*. I see from the manual, that each week you're supposed to take about five minutes and record that week's transactions. (Actually, it works best if your recording



frequency matches your paycheck frequency.)

Well, the first step appears to be *F1* (Load Files), so I press *F1* and then discover another feature of the program—entertainment. During the loading of files, apparently random (musical?) notes are played. I later found that the more files you have, the more “music” you hear. It would probably attract a lot of attention in the library or on an airplane. Maybe it’s subtle advertising. I could find no command to turn it off. Anyway, the music has stopped now and the next step is to select the *Update* choice from the main menu.

This presents a full-screen display (Figure 2) showing the first eight of your categories and the default amount that will be posted for each. Across the bottom are the choices for this menu. *Up* and *Down* page though the categories in groups of eight, beeping when it reaches the top or bottom of the list. You may choose *Change* to adjust the amount that will be posted to the current totals, either by typing a new value or an incremental (+ or -) amount. *Add* will post the amounts displayed to the totals. *Exit* will return to the main menu, and *Files* will take you out to the RAM files so you can edit *TAXCAT.DO*, if necessary, and then rerun the *WEETAX* main program (the data files will still be loaded).

I select *Change* and then enter a category code and a new amount. I continue this routine, selecting *Change*, typing the two-letter category code and the new amount or adjustment, until all categories show the amount I want to post for this pay period. When the amounts are correct for this period, selecting *Add* will post them to the year-to-date totals. Some of the categories may have the audit trail option selected, and this will cause the program to ask you for a description of the amount for that category.

This was one thing I found that did not match the way things normally occur for me. I may have more than one charitable contribution during the week for which an audit trail comment is desired. After some thought, I realized I could accomplish this by setting the default for each category to zero, so only the categories which had non-zero amounts would post and possibly request a comment.

After making that change to the

*TAXCAT.DO* file I post the rest of my transactions. During this effort I discover that the program will let you post the same entries more than once without objecting. This could allow errors caused by errant fingers or keyboard bounce.

#### OOPS!

Then the door bell rings...another contribution. I go immediately to my trusty Model 100 to enlighten *Weetax* about this transaction. The program is sitting at the main menu, so I press *F1* (Load Files). Oops! I realize that the files were already loaded, and I had made changes and not saved them. Well, *Weetax* does not seem to mind; it is busy carrying out my request to load the files again. Once the files are again loaded, I have to post my first batch of changes again, adding this most recent contribution. All goes well, and I decide to save the files before repeating my previous mistake.

Continuing to test the software, I print a summary of my work. The listing includes the year summary and a printout of the reasons for each amount in categories where an audit was requested.

gr gross	ss fica	fd fedl	st state
np net	gr insur	lt disab	em expen
gr 673.38	ss 41.28	fd 107.66	st 40.84
np 471.92	gr 11.88	lt 2.62	em* 0.00
Last Upd: 02/25/89 Today: 03/01/89			
u(P),d(WN),c(HNG),a(DD),e(XIT),f(ILES):			

Figure 2. The update menu displays the default amounts for eight categories at a time, allowing you to modify and post any changes.

Everything comes out all right, except an extra sheet is ejected. (The program sent two form feed characters to my printer.) Feeling brave now, I decide to find this in the program and delete it. No problem, since the program is structured and has comments. Apparently the author has a DMP-2100 printer (according to the comments), which explains the need for the extra form feed (he has a pull-type forms tractor).

#### GOING FOR SPEED

Everything else goes well, just more slowly than I would like. My confidence is really up now, so I decide to make the program run entirely on my Booster Pak (which uses *R:* instead of *0:* to reference disk files). Again, no problem at all. Since the programs are well structured, all file references occur only once. Within five minutes I am finished, and *Weetax* runs much faster.

I called the author once more to relate my experience. He expressed great

## WANTED!

New hardware, new software, new ideas for the growing Tandy marketplace.

Ultrasoft Innovations (you've seen our products advertised and reviewed in this magazine) is looking to expand our product line. If you have a program or hardware device that you want advertised and distributed, or if you have an idea for a product that's needed in the marketplace, write to Richard Eckerlin, Ultrasoft Innovations, P.O. Box 247, Champlain, NY 12919 or call (514) 487-9293 (9-5 EST). This could be your ticket to fame and fortune! (Well, maybe at least fame in the Tandy community and some extra Christmas Club spending money.)

interest, and later I received a letter documenting my call and stating what would be done regarding each of my comments. Most of the changes I suggested would be implemented prior to first shipment of the product. So by the time you read this, most of the inconveniences will be gone, and the product will run on more environments than just *Disk Power*.

#### THE BOTTOM LINE

In summary, *Weetax* delivers on its promise, and especially with the upcoming changes, this program provides a simple solution to record

keeping. Since the Model 100 goes with me as I travel, my tax records can now easily be kept up to date. One more time consuming job eliminated!

Now if we could just write a program to eliminate the IRS... B

*Editor's note: As of publication time, Weetax now supports other DOS's and devices, such as Booster Pak and Gold Card. Other changes have been made as well, including an option to disable the sound.*

-MN

#### Manufacturer's Specifications

*Weetax*™—\$44.95 (DVI), \$49.95 (PDD)  
Software Versand  
Points West No. 158  
3131 West Cochise Drive  
Phoenix, AZ 85051  
(602) 997-1523



# BASIC Bits

*A Source for Model 100/102 Public Domain Software*

*By Thomas L. Quindry*

If you read the January "BASIC Bits" column, remember the controversy caused by the selection of programs I have presented in my column and offered on a distribution disk. After much thought, I have reached a decision, subject to change based on public opinion, regarding the column and distribution disks. I encourage your continued comments on this subject.

## THE CONTROVERSY CONTINUES

For the most part, it is not possible for me to contact authors prior to publication of the column to clarify their intent regarding the "implied unrestricted distribution," as stated in my January column in the section called "The Legal Consensus." Therefore, I will work by exception. I will continue as I have in presenting programs and distribution unless notified otherwise by an author. This may mean a little inconvenience to readers who wish to send for a distribution disk, since I may have to remove a program from the disk if the author requests. Include a self-addressed, stamped envelope if you want the disk only if a particular program is included. I will return your check if I can't deliver that program or an alternative.

I invite authors of programs for the Model 100/200 to clarify their intent (either positive or negative) in writing to me even before I would cover their programs. And I also encourage these authors to send me a disk with their programs if they especially would like coverage and distribution through this column. Send me a dollar for return postage and I'll return the disk with other programs I have.

Regarding CompuServe, GENie, and the others, if they would like me to credit them as the source of a program, I will be glad to. All they have to do is ask (in some official capacity) and give me some sort of access so I can check the programs out.

Mr. Wheeler has expressed his desire that I not distribute his programs. I respect his rights and they will not be distributed. After I received Mr. Wheeler's letter asking me to remove the programs I substituted two other programs. In place of XMDPW5, I have

substituted XMD100, by John Chenoweth. This program was the original program from which Mr. Wheeler's program was based. Mr. Chenoweth made no restriction on his program and in fact, in a source code file called XMD105.ASM, which I have, encouraged others to modify and share his program even though copyrighted. In place of BASBLD.BA, by Mr. Wheeler, I have substituted SAVEML.BA, also included this month. The following is a response to Mr. Phil Wheeler's letter to the editor in January, along with other comments.

## *Mr. Chenoweth made no restriction on his program*

### RESPONSE TO MR. WHEELER

While I respect your right to restrict distribution of your programs, I cannot agree with your reasonings and inconsistency in applying them. You have stated that Mr. Chenoweth's program was copyrighted and not released to the public domain. Mr. Chenoweth, by uploading his program to CompuServe, gave "implied unrestricted distribution," which includes my method of distribution. He did not specifically restrict it to CompuServe as you have assumed. You yourself stated to me in a letter that you have been unable to contact him for clarification. So you can see it is impossible for me to confirm anything other than what is implied by his upload.

Mr. Chenoweth's program, XMD100, and your enhancements, XMDPW5, and XMDPW6, are already widely distributed whether you know it or not, and not by me. These programs and many others on CompuServe are also on many public bulletin boards and on GENie also. From a directory of GENie programs the following, XMDPW5.DOC, XMDPW5.SRC,

XMDPW5.200, XMDPW5.LOD, XMDPW5.100, XMDPW5.INF, XMDPW5.ASM, and XMDPW5.DVI were apparently uploaded by a person with the GENie address of PWHEELER between December 1, 1987 and March 18, 1988. If PWHEELER is you, it is inconsistent with your own reasoning of protecting the rights of other authors as stated in your January letter to the editor.

The original authors of programs always have the opportunity to restrict their programs regardless. You may, in fact, be unwittingly circumventing the other authors' desires for further distribution of their programs by making modifications to them and restricting distribution. You have been very prolific in modifying and enhancing the works of others and providing conversions from the 100 to 200 and vice-versa. Your improvements and contributions may have replaced the original author's programs to the extent that their versions no longer exist. It is indeed unfortunate that you have taken this position as a big chunk of software available for the Model 100 and 200 user may be lost in the process. You're wasting your efforts too, which I'm sure were to enhance the enjoyment of other laptop users.

I hope you will reconsider your position, not just for the two programs from my November column, but for all you have modified that have not been specifically restricted by the original author. Don't get all tied up with the term "public domain." No one is trying to add a label to his or her program that may not exist. Let the original author decide whether he wants to restrict distribution. Don't restrict it for him. For electronic databases (such as CompuServe), the term *copyright* does not imply a distribution prohibition.

### OTHER RESPONSES

In addition to sending Mr. Wheeler an advance copy of the January column, I sent copies to Wayne Day (Sysop of the Model 100 Forum for CompuServe), Dave Thomas (Sysop of the GENie Laptops Roundtable), and Rich Hanson (Founder of Club 100). CompuServe and GENie apparently want to stay out of the fray with no comment. CompuServe



decided to treat it as a proposal for a new service and said they would evaluate my suggested solution of asking for CompuServe time in the January column. Dave Thomas did not respond. Only Rich Hanson answered the issue full force. Below are CompuServe's response and Rich Hanson's response for Club 100. Rich's response has been shortened to conserve space.

#### COMPUSERVE'S RESPONSE

Dear Mr. Quindry: This is to confirm the receipt of your proposal for a new CompuServe Information Service product. The proposal has been forwarded to the appropriate CompuServe marketing staff for evaluation with respect to our current marketing strategy, product area needs, and revenue potential. This review process may take 60 to 90 days.

Given the volume of proposals we receive, we will only recontact those individuals whose proposals are most synergistic with our current business goals.

I'd like to thank you again for your interest in becoming a service provider. Sincerely, Sharon Wychoff, Proposal Review Administrator

#### CLUB 100'S RESPONSE

Dear Tom: For over six years CLUB 100's position has been based on, "the intent of the author." Authors control their own work. It is not right for us, as distributors, clubs and promoters, to make legal decisions for the authors or owners of program code. It is also not right for third parties like you or us to be victims of uncertainty, politics or power struggles.

CLUB 100 operates under one rule for program acquisition and distribution. If a program was ever offered for sale to the open market then it is not in the public domain, and thus, it is not in our library. All else is fair game. It is our contention that the author, or legal owner, not the distribution service, determines whether a program is in the public domain.

The club is our interest and hobby. In fact, CLUB 100 is a registered, non-profit, public benefit corporation in the State of California. We did this to make sure there will be no question as to our intent. If anyone would like to try making a profit doing the things we do for the Model 100 community then more power to them. We work to just break even each month so that our hobby remains interesting and fun. And, we share and swap. We have openly swapped programs with yourself, the Boston Computer Society's lap computer group, and Compuserve,

Genie and Delphi sysops, sponsors and members. We have swapped mailing lists with commercial firms, and selected lists with new user groups, like the Heart of Illinois Model 100 User Group. We share ... we swap ... we support ... we have fun! We are here for the development of all M100, T102 and 200 owners, world wide.

Our recommendation is this: If authors do not want their programs considered "in the public domain" they should keep their programs out of accepted public domain distribution channels. If they [authors] feel that their code is worth money then they should advertise it for sale; making their intent clear. The *Portable 100* Magazine Classified Advertising offers a great place to start. It's working for us.

If commercial online services are concerned, for whatever reason, they should insist that members involved in development work restrict their work to private e-mail and not public forums.

Our community is no longer in the spot light. Support and new products are almost gone. *Portable 100* magazine remains the undisputed foundation of Model 100, 102, 200 and 600 support. Remaining support exists in the underground we create through sharing our knowledge with each other. When the sharing stops, our community stops... sharing stops when tails get short... tails get short through ignorance, insecurity and greed.

Tom: You just keep on doing "BASIC Bits," and distributing your disks in any manner you feel is right for our community. You, and *Portable 100* magazine have the complete support and admiration of our club and its membership. Regards, Richard Hanson, Founder, President, sysop

#### WRAP-UP

Now CompuServe leaves the door open for consideration without any promise of a response. If you are a CompuServe user, how about getting a discussion going there so we can see what develops. Also, how about you GENIE, Delphi, and Source users? I for one would like to see this issue resolved in the open. How about you?

#### THIS MONTH

I apologize for taking so much space discussing the issue of the types of programs discussed here, though it is one that needs resolution. My descriptions of programs will thus be short so you can retrieve some value out of the column. Programs described this month will be useful to the BASIC programmer. They will help you squeeze out those wasteful

## WEETAX<sup>TM</sup> The Weekly Tax Program

For periodic maintenance of input to your personal income tax return.

- table-driven panel fields
- your labels and default data
- optional, prompted annotation
- year-to-date summary printout
- resets to start next year
- only 377 bytes reside in RAM
- standardizes format
- promotes time management
- provides current accounting
- avoids the year-end crisis
- keeps you in control

DVI: \$44.95 ppd PDD: for Ultrasoft \$49.95 ppd Disk Power<sup>TM</sup> 100

Watch for review in *Portable 100*

Software Versand, Points West No. 158  
3131 W. Cochise Dr., Phoenix, AZ 85051  
Phone: 602-997-1523 © 1989 TMO

#### Circle 126 on reader service card.

bytes. Some of these programs may also run on a Tandy 200. I will give my opinion on this when applicable, but I would suggest that you have everything backed up in your Tandy 200 before trying them.

#### AUTO#.BA AUTHOR UNKNOWN

*Auto#* gives you an auto line numbering facility when you write your BASIC programs. The program automatically gives you the specified first line number and increments to the next line number and as you enter your BASIC statements, they are saved in a .DO file. This takes away some of the flexibility of your programming if you want to edit a line already entered, because you can't do it right away. You have to exit the program (with CTRL-C and go into the text file). Nevertheless, it is a nice little utility. This program should also work on a Tandy 200.

#### DATE\$.BA BY T. L. QUINDRY

This is a handy little utility that I wrote for setting the date and time on my Model 100. Especially when using TELCOM, at certain times the year gets advanced. If you run *Date\$* and just press the ENTER key for the first prompt, the year is set to 1989. In later years, you will have to edit line 10 in *DATE\$.BA* to change the default year. This program should also work on a Tandy 200.

#### HISTLD.BA BY TOM BENNETT, POLAR ENGINEERING AND CONSULTING

*Histld* and its related file *HISTPT.BA* comes from the Club 100 library of public domain programs. *Histld* is a loader for a machine language program called *HISTO.CO*, which will help you find out the time hogs in your BASIC program.



## DVORAK KEYBOARD SYSTEM

Give your laptop the Rolls-Royce of keyboard systems. The *Dvorak* key arrangement eliminates wasted motion, reducing finger travel by more than 90%! Type faster and more accurately. And it feels better—more natural, more relaxed. So there's less effort, less error, less fatigue. And learning to type is much easier on a Dvorak keyboard. No hardware! Just run the program once and forget it. Uses less than 500 bytes of RAM. Works in *BASIC*, *TEXT*, *TELCOM*, etc., just like it came from the factory that way! (Tandy 100, 102, 200, and NEC-8201) **\$32.95**—Portable Disk Drive Disk. **\$35.95**—Standard Tape. US Postage and Handling included. The DVORAK Keyboard System for notebook computers, from:

**Granite Street Portables**

**P.O. Box 651**

**Peterborough, NH 03458-0651**

*Please allow six to eight weeks for delivery.*

Circle 29 on reader service card.

Just enter an extra line temporarily in your program, *RUNM "HISTO"* and run your program. When you finish, you *RUN "HISTPT"* and it gives the statistics relating to how much time is spent on each line of your program. You can see it graphically or else save the stats to a file. This program will not work on a Tandy 200 because it uses machine language.

### KEYBD.BA UNKNOWN AUTHOR —MODIFIED BY T. L. QUINDRY

*Keybd* is a short program that demonstrates pseudo-keyboard input. You can use this technique in your *BASIC* programs. It puts characters into the keyboard buffer so that keyboard-like entries can be made automatically after your program is finished. You can enter a maximum of thirty-two characters. The first character has to be a space. It's interesting and does have some applications, as you'll see in this demo file. When you run this program, it places characters into the buffer, entering the commands *NEW* and *CLS*, creating a one-line *BASIC* program, and running it. This program will not work on a Tandy 200 but could be easily modified by someone who knows the address of the Tandy 200 keyboard buffer.

### KEYWRD.BA BY T. L. QUINDRY

This is just a simple little program that reads the keywords from the *BASIC* ROM and prints them, formatted, on the screen. It is written so you can edit the program to print the keywords to a file if you prefer. This program will not work on a T200 but could be easily modified by someone who knows the address of these *BASIC* keywords in the Tandy 200.

### LENGTH.BA BY T. L. QUINDRY

## PUBLIC DOMAIN

An article on *LENGTH* appears in the September '87 issue of *Portable 100*. It is public domain, Model 100 only, and I have included it here since it fits in with the theme of this article. It creates a machine language program to give you the length of each file in RAM in addition to just about everything else you would like to know about memory usage.

### RENUM.BA BY RICH YOUNG

If you have ever wanted to renumber your *BASIC* programs, this will do the trick for you. You must first save your *BASIC* program as a *.DO* file. Though still slow, this is one of the quickest renumbering programs for the Model 100 that I have come across. Still, some programs have *BASIC* statements too long for this program to process. *Renum* is from the Club 100 Library. This program should also work on a Tandy 200.

Let me give you a little tip here. If you have another computer such as a TRS-80 or an MS-DOS PC, you can port your program in ASCII over to that computer using a null modem cable and a communications package and use the renumbering program that comes with DOS for that computer. Just load the program into *BASIC* and enter the command, *RENUM*. Save your program with the command, *SAVE "filename".A* where the *A* saves it as an ASCII file. Then port it back to the Model 100.

### SPOUT.BA BY RON GOLINI

*Spout* is also from the Club 100 Library. As with *Renum*, you must first save your *BASIC* program as a *.DO* file. *Spout* removes extra spaces in your program. Unfortunately, it also removes spaces in a *REM* statement. By removing extra spaces, you will save precious memory, and also your program will run slightly faster. This program should also work on a Tandy 200.

### TOOLKT.BA BY PETER STANWYCK

Another program from the Club 100 Library, *Toolkt* provides the functions of *Renum* and *Spout* in addition to a few others, seven functions in all. I included *Renum* and *Spout* in case you didn't want to load this much larger program. You can print a somewhat structured listing of your *BASIC* program. You can also send to a printer a list of which lines branch to other lines. The author calls this *Fyte the Byte*. You can reset your function keys back to their original definitions using this program and also determine the checksum value of a *BASIC* program. Last of all you can enter data into either an existing text file or a new file. It appends your text to the end of the

file. This program should also work on a Tandy 200.

### SAVEML.BA BY T. L. QUINDRY

*Saveml* saves your machine language programs in the form of an ASCII file that you can load into *BASIC* and run to create the original machine language program. The purpose of this program is to create a *BASIC* loaded program so you can distribute public domain and shareware machine language programs via bulletin boards or direct computer-to-computer transfer using a null modem cable. If you use a desktop computer to store your Model 100/200 files in ASCII format, then *SAVEML.BA* will be useful to you. It runs on both the Model 100 and 200.

### SCR200.BA BY T. L. QUINDRY

*Scr200* is just a little bonus program I threw in here. It is a Tandy 200 version of my *Scripty Text Processor* described in the January '89 issue of *Portable 100*. If you would rather have one of my other *Scripty* versions for the Model 100, either the regular or DVI (Disk-Video Interface) version, let me know when you ask for the disk I distribute.

### VARLST.DO BY WOODS MARTIN

*Varlist* is a subroutine you merge, using the command *MERGE "VARLST"* at the end of a *BASIC* program. Your program must not have any line numbers greater than 58999. After you run your program, you enter the command, *GOTO 59000*, and all the *BASIC* variables your program uses will be displayed. If your program normally exits to the *MENU*, you must use *CTRL-C* to stop it. If your program uses the *CLEAR* function or *RUN* command from within it, only variables used after the *CLEAR* or *RUN* will be displayed.

### FINAL NOTES

As a convenience to readers, this month's programs will be made available to readers on a 100K TPPD1 disk for \$7. To order the programs described in this column or any other "BASIC Bits" column, send \$7 (includes packaging and handling) along with the month and year of the column. The cost per disk is not to pay for the programs but for the cost of distribution. If you would rather have the programs in ASCII format for Radio Shack Model 3 TRSDOS or MS-DOS, please specify them. The cost is the same. A self-addressed label will speed your order. Send to Thomas L. Quindry, 6237 Windward Drive, Burke, VA 22015, Attn: March 100.



## DEFUSR appears monthly to answer your questions about Tandy notebook computers.

Send your queries to: DEFUSR, PORTABLE 100,  
P.O. Box 428, Peterborough, NH 03458-0428.  
Please enclose a stamped, self-addressed envelope for our reply.

### DERANGED KILLER

Upon returning to the menu, KILL.BA (P100, Jan. '88) appears to generate five carriage returns, CHR\$(13), leaving the computer in BASIC with four carriage returns having been executed on the screen. No harm done. The menu is only an F8 away, but I'm sure it needn't happen. Can you check into this? Will this invisible program count toward the maximum number of files allowed? Can I delete it while it is invisible?

Stephen W. Lees  
Forest Hills, NY

KILL.BA's strange behavior is caused by the POKE AD,10 statement in line 2 erroneously telling the keyboard input routine to expect ten characters (the five in "Menu" + CHR\$(13), followed by five of whatever remains in the keyboard buffer from a previous operation). In tests here the glitch never appeared, because another program in my machine constantly clears the buffer. KILL.BA will behave if you change the statement to POKE AD,5.

An invisible file counts toward the allowable maximum and is killed like any other, using BASIC's KILL "filename.ext" statement. Type the filename exactly as it exists—if there's no extension, don't type one.

-MN

### NEC DOS?

I have a Model 102 and a NEC 8201A. Will my Tandy Portable Disk Drive 2, which I use with my Model 102, also work with the NEC?

I am a teacher and am especially interested in educationally related programs and information. I thoroughly enjoyed the September issue but must still have typing errors in the programs LEARN.BA and STUDY.BA, so I decided to go ahead and order your disk.

I am also wondering if there is a way to

transfer programs directly between my two computers.

Diane Miller  
Madang  
Papua New Guinea

Yes, Diane, the PDD-2 will work with your NEC, using Traveling Software's NEC version of TS-DOS (see their ad).

The teaching programs work as published, but the P100-To-Go disks do make it much easier by avoiding those nasty typos. We have more education programs on the way.

You can transfer files between machines

## Will my Tandy Portable Disk Drive 2 work with the NEC?

via a null modem cable or adaptor. You can purchase an adaptor from Radio Shack or make your own null modem cable ("Ending Your Computer's Solitude," Sep. '88). With the machines thus connected, you can use two methods.

One is to use TELCOM in both machines with matching RS-232C "stats" (I use 98N1E on the Tandy and 9N81XN on the NEC) and simply upload from one while downloading to the other. This method transfers .DO files only, its main advantage being that it also works with other machines, like desktop computers, which have some form

of telecommunications software or a batch file ("Quick, Easy and Cheap Model 100 to MS-DOS Computer File Transfers," July '88).

Using two notebook machines, it's easier to do directly from within TEXT. For example, let's send MYFILE.DO from the NEC to the Tandy. First, on the Tandy, go into TEXT and create an empty file named MYFILE.DO (or any name you wish), press F2 (Load), type COM:98N1E and press ENTER. Now on the NEC, go into the MYFILE.DO file, press F3 (Save), type COM:9N81XN and press RETURN. After a brief pause, you'll see the file appear on the Tandy's screen. Press F8 on the Tandy and SHIFT-F5 on the NEC, and you're done.

You can similarly transfer .BA programs. For example, let's send MYPROG.BA from the Tandy to the NEC. First, go into BASIC on both machines. Now on the NEC, press F1 (Load), type COM:9N81XN and press RETURN. On the Tandy, press F2 (Load), type MYPROG.BA and press ENTER to load the program into BASIC. Now to send it, press F3 (Save), type COM:98N1E and press ENTER. When the file has been sent, the Ok prompt appears on both machines. Now on the NEC, save it as a .BA program: press F2 (Save), type MYPROG.BA (or any name you wish) and press RETURN.

A word of caution: Since Tandy and NEC BASIC languages differ in many respects, usually only "plain vanilla" programs work in both machines without some modification. Until you're sure a transferred program works, back up important files before running it.

-MN

### NO-TAB NEC

I imagine you're read by many other NEC'ers. Using an NEC PC-8201A, I value that you at times include as inserts the ROM addresses or programming details for the NEC.

In your reply to Ted Knyszek (Nov.



## Four Model 100 Books!

① **The Model 100 Program Book** by Terry Kepner and David Huntress. 51 useful BASIC programs for home, office, and education: bar graph, depreciation, annuity, pie chart, forms creation, invaders game, memory scan, touch typing tutor and many others—\$14.95.

② **60 Business Applications Programs** for the TRS-80 Model 100 Computer by Terry Kepner and Mark Robinson. 60 powerful programs for interest calculations, annuities, depreciation, invoices, breakeven sales analysis, and more—\$19.95.

③ **Inside the Model 100** by Carl Oppedahl! "an excellent Guide"—New York Times. A thorough guide to the Tandy Model 100. Learn about A.L. programming; disassembled ROM routines; keyboard scanning; UART, RS-232C, and modem; Clock/calendar chip; Interrupt handling; 8085 instruction set—\$21.95.

④ **User Guide and Applications for the TRS-80 Model 100 Portable Computer** by Steven Schwartz. 14 ready-to-run programs for business: statistics, graphics, sound, and more. With cassette tape—\$44.95. Buy them separately—the book is only \$19.95; the cassette tape is only \$27.00.

**Granite Street Portables**

**P.O. Box 651**

**Peterborough, NH 03458**

*Please allow six to eight weeks for delivery.*

**Circle 30 on reader service card.**

## DEFUSR

NORTH ...

There you go; that wasn't so bad.

**Robert J. Holland, Sr.  
Sayre, PA**

*Yeah, okay. (Picky, picky, picky!) You're right, though. After saving NEWDOS.CO, rename FLOPPY.CO back to FLOPPY, run FREMEM.BA to kill FLOPPY, and then kill FREMEM.BA.*

*Perhaps a safer way to run it is to type CLEAR 256,60000: RUNM "NEWDOS" instead. That avoids accidents by eliminating the need to remember to LOADM the program. If you can spare a directory slot, make that line into a small .BA program, and then you needn't remember the CLEAR addresses, either.*

*Now that you've opened this can of worms, there are ways to further improve NEWDOS, so take a look at "DOS Patches III" in this issue. Thanks for getting on my case, Robert!*

-MN

### MAC CONNECTION

David Rowell's articles on using a null



## Three computer dealers claim it can't be done.



modem cable to link the Models 100/102/200 to other computers have been particularly good reading and very informative. I've found it easy to connect my M100 with various TRS-80's, and it's the perfect accessory for my Amiga—but I've been trying for weeks to transfer ASCII files from a Macintosh.

The Macintosh Plus, SE, and Apple II GS all use a mini-round 8-pin jack for the serial port. The pins are labeled in the instruction book as:

- |        |                       |
|--------|-----------------------|
| 1 HSKo | Handshake out         |
| 2 HSKi | Handshake in          |
| 3 TXD- | Transmit data         |
| 4 GND  | Signal ground         |
| 5 RXD- | Receive data          |
| 6 TXD+ | Transmit data         |
| 7 GPi  | General purpose input |
| 8 RXD+ | Receive data          |

I've called three computer dealers

asking for a null modem cable only to be told it either couldn't be done, or I'd have to have a custom cable wired.

Would you run a diagram of the connections to be made for a null modem cable to go between the laptops and the Apples?

**Dick Kahoe  
Warrensburg, MO**

*Two solutions. A) Use a Mac-to-Modem cable (as sold by Apple) with a standard null modem adaptor to switch the lines, or B) use an Imagewriter I cable (if you can find one) to connect directly to the Tandy laptops.*

-TK

### EURO-DATES

I have a very specific querie. You see, in Europe, dates are expressed in DD/MM/YY format, and so are the DATE\$ on European-made Model 100's. Now most of the listings we get in *Portable 100* are obviously written for the U.S. M100, and those which deal with DATE\$ never happen, due to incompatibility bugs.

So if you could explain how to modify the BASIC statements in order to cope with our European way of expressing DATE\$, I am sure it would help to make more useful the maze of listings which, written in the U.S.A., deal with DATE\$ as MM/DD/YY. Many thanks!

**Jean-Luc Michaud  
Chertsey, Surrey, England**

*In general, programs deal with DATE\$ by dividing it into month, day, and year components, usually by means of BASIC's LEFT\$, MID\$, and RIGHT\$ functions.*

*LEFT\$(DATE\$,2) or its equivalent, MID\$(DATE\$,1,2), returns the first two characters of the date string. MID\$(DATE\$,4,2) returns the middle two characters.*

*RIGHT\$(DATE\$,2) or its equivalent, MID\$(DATE\$,7,2), return the last two characters (the year). Since that's the same in both U.S. and European formats, you needn't concern yourself with them.*

*That leaves only the month and day to deal with. Since European and U.S. formats simply reverse these portions of the date string, just change all occurrences of LEFT\$(DATE\$,2), or its MID\$ equivalent to MID\$(DATE\$,3,2). And conversely, change occurrences of MID\$(DATE\$,3,2) to LEFT\$(DATE\$,2) or its MID\$ equivalent. For example, suppose you want to change AS="MM/DD/YY" to the European "DD/MM/YY." Just rebuild the string like this: AS=MID\$(AS,4,2)+"/" + LEFT\$(AS,2)+"/" + RIGHT\$(AS,2).*

*While probably not the most efficient means of translation, it's a starting point. Perhaps readers can suggest alternatives.*

-MN

'88, p. 26) you refer to the ROM PNOTAB routine. Can you print the relevant NEC 8201A ROM address, because I have also encountered that eight CHR\$(32)'s for a CHR\$(9) as a nuisance, unable to get around it.

**G. van Wessem  
Ferntree Gully, Australia**

*My ROM disassembly suggests 6365 (18DD hex) as NEC's equivalent function. Unlike Tandy's CALL statement, NEC's EXEC won't pass parameters. Instead, you POKE desired register values into special RAM locations beforehand (see p. 4-43 of your BASIC manual). Since PNOTAB expects the printer character's ASCII value to be in the A register, POKE 63911,value: EXEC 6365 should do the trick.*

-MN

### TSK! TSK!

Nuge, I'm surprised at you! I just bought a Tandy PDD-2 portable disk drive to replace my PDD-1. I looked up your programming sidebar on DOS patches (Sep. '88 *Portable 100*) where it said that FLOPPY for the PDD-2 can't be saved to tape or disk. TSK! TSK! Use the utility CHANGE.BA to rename FLOPPY to FLOPPY.CO, enter BASIC, type LOADM "FLOPPY.CO" (press ENTER), and make your changes. Then you can SAVEM "NEWDOS.CO", 60000, 62737, 62701 and press ENTER. You can now save NEWDOS to tape or disk, as fitting. Just remember to CLEAR 256,60000: LOADM "NEWDOS.CO" and then CALL 62701 to use NEWDOS.CO when you've cleared high memory for other uses.

I then used CHANGE.BA to make NEWDOS.CO invisible so I wouldn't accidentally kill it. If NEWDOS.CO isn't resident in memory, CALLING 62701 will buy you a one-way ticket to the FROZEN





# Unpuzzling: The Solution

*An addendum to your Tandy 200 manual,  
plus the solution to our PUZZLE.BA program.*

# W

hen I first figured out how to access RAM locations in the alternate banks of the Tandy 200, I set certain goals for myself. I was determined to bring cross-bank access to *BASIC*, *TEXT*, *TELCOM*, and of course, to the main menu. I feel that I have accomplished (in a limited way) what I had originally set out to do, but I would like to think that it doesn't stop there.

I hope I have piqued the interest of some accomplished programmers who can use the ideas I have presented and expand what I've done. I tend to move to something new immediately after revealing my latest efforts, and I don't really develop my projects to their fullest potential.

The work that has appeared in "CUSTOM 200" was presented for the purpose of demonstrating the significance of what I've found, and by no means should it be considered "perfect." I'll be the first to admit that my projects end when they appear complete and that they are presented after some successful beta testing.

## NiCd INSTALLATION

This month I am not offering software for the Tandy 200 but instead would like to focus a bit on the hardware. In the four years that I've had the Tandy 200, I have only had to change the batteries twice. But when I replaced the second set of batteries, I decided to install NiCd's (nickel cadmium rechargeable batteries).

The modification for installation is quite simple (according to the documentation). Just install jumpers J301 and J302 on the memory PCB (printed circuit board). The memory PCB is the circuit board that holds the option RAM and ROM sockets. To access that PCB requires removing the bottom of the Tandy 200. The memory board is between the keyboard PCB and the bottom cover. Once you install the jumpers, you can reassemble the unit.

Simple enough? Well here's where Murphy's Law holds true to form! I did the modification, charged up the NiCd's by leaving the unit plugged in overnight, and in the morning proceeded to use the Tandy 200 as usual, except that I kept it on battery power to see how long those NiCd's would let me work without the AC adapter.

Within three hours the low battery light came on. I had been getting at least six hours of use with fresh alkaline batteries, and although the NiCd's were only 1.25 volts when charged (instead of the 1.5 volts of fresh alkalines), I thought I should get more computer use than just three hours.

Well, I was right. Those NiCd's kept the Tandy 200 powered for over two more hours before the low voltage sensors turned the unit off. I might have gotten even more time, but I had used the internal modem, which drains the batteries more rapidly. In any case, I realized that if the warning LED came on two or more hours before auto-shut-off, then what purpose does it serve?

Since the Tandy 200 worked fine until it powered off, I concluded that the only problem was the bias in the LED circuit.

```

Ø REM PUZZLE SOLUTION BY PAUL GLOMBAN
1 REM                                COPYRIGHT (C) 1988
2 ONERRORGOTO55:CLS:DIMLC(20):C=1:FORI=Ø
  TO9:READSQ(I),TY(I):NEXT:FORI=1TO4:READX
  X(I),YY(I):NEXT:FORI=ØTO9:GOSUB45:NEXT:I
  =9
3 RV$=CHR$(27)+"p":GOSUB45:GOSUB24
4 READA:IF(A=>48)AND(A<=57)THENRV$=" ":GO
  SUB46:I=VAL(CHR$(A)):GOTO3
5 IFA=28THEN13
6 IFA=29THEN1Ø
7 IFA=3ØTHEN17
8 IFA=31THEN2Ø
9 BEEP:GOTO4
1Ø IFSQ(I)MOD5=ØTHEN9
11 SF=Ø:GOSUB28:IFSF=ØTHEN9
12 GOSUB44:SQ(I)=SQ(I)-1:GOTO3
13 IFSQ(I)MOD5=4THEN9
14 IFTY(I)MOD2=ØAND(SQ(I)+1)MOD5=4THEN9
15 SF=Ø:GOSUB36:IFSF=ØTHEN9
16 GOSUB44:SQ(I)=SQ(I)+1:GOTO3
17 IFSQ(I)<5THEN9
18 SF=Ø:GOSUB32:IFSF=ØTHEN9
19 GOSUB44:SQ(I)=SQ(I)-5:GOTO3
2Ø IFSQ(I)>14THEN9
21 IFTY(I)>2THENIF(SQ(I)+5)>14THEN9
22 SF=Ø:GOSUB4Ø:IFSF=ØTHEN9
23 GOSUB44:SQ(I)=SQ(I)+5:GOTO3
24 FORJ=ØTO19:LC(J)=Ø:NEXT:FORJ=ØTO9:LC(
  SQ(J))=1:IFTY(J)MOD2=ØTHENLC(SQ(J)+1)=1
25 IFTY(J)>2THENLC(SQ(J)+5)=1
26 IFTY(J)=4THENLC(SQ(J)+6)=1
27 NEXT:RETURN
28 IFLC(SQ(I)-1)=1THENRETURN
29 IFTY(I)<=2THENSF=1:RETURN
3Ø IFLC(SQ(I)+4)=ØTHENSF=1
31 RETURN
32 IFLC(SQ(I)-5)=1THENRETURN
33 IFTY(I)MOD2=1THENSF=1:RETURN
34 IFLC(SQ(I)-4)=ØTHENSF=1
35 RETURN
  
```

*continued*

**PUBLIC SERVICE ANNOUNCEMENT:** Because of the public outcry, we at Portable 100 have decided, as a public service, to help prevent assault on batteries. If you (take note, Mr. Almlie) have a loved one who has engaged in NiCd abuse, overusing and undercharging while trying to solve PUZZLE.BA (Dec. '88, p. 29), you may direct him or her to this page for the solution. Be aware, though, that like all public welfare programs ours has a catch. The program below shows you the solution to the puzzle, but you have to remember it. Good luck.



Studying the schematic diagram of the Tandy 200 power supply and noting the circuits involved with the two jumpers, I decided that one jumper was for the trickle charge of the batteries. The second jumper altered the bias of the LED sensor circuit.

At that time, my Tandy 200 was still under warranty—installing the jumpers did not void it—so I brought the unit to a local Tandy repair center. I was using the *Tandy 200 Service Manual* for reference, and I discussed the problem with the service manager.

But to maintain the warranty, I could not make any further changes. After a brief (but technical) discussion with a local service manager, I left the unit with him for two hours. We generally agreed on what had to be done, but he needed the official "OK" from Tandy to proceed with further modifications.

The fix was simple and pretty much like what we had discussed. It involves changing one resistor (R93) on the main PC board from 94.4K ohms to 150K ohms. There was no charge for the service. The *LOW BATTERY* LED now gives me about a twenty-minute warning. I get about five hours of use without the AC adapter, and my Tandy 200 has gone three and a half years on one set of NiCd's.

As a postscript to this story, the jumper at J301 is in series with the 94.4K ohm resistor. So rather than installing the jumper and then changing R93, you could instead simply install a 55.6K ohm resistor at J301 in place of a wire jumper, and leave R93 intact.

## UNWANTED COLD STARTS

Have you ever found your Tandy 200 "locked up" in bank #2 or bank #3, with no way to recover the system? Pressing *SHIFT/BREAK/RESET*, and even *CTRL/BREAK/RESET*, will not unfreeze the system. As a last resort you turn power off and attempt to cold start the frozen bank by pressing *CTRL/BREAK* while turning power back on. This time it works. But Murphy's Law prevails, and you find that you've just wiped out bank #1.

As if that wasn't painful enough, when you switch into the previously-frozen bank, your Tandy 200 locks up again. So you perform another *POWER-ON/CTRL/BREAK*, which cold starts bank #1 again, and you're still faced with the problem of unfreezing the locked-up bank. The solution is this: To cold start the corrupted bank, you must start in the *previous* bank. While holding down *CTRL/BREAK*, press *TAB* or *F1* to switch into the frozen bank, and that bank will cold start.

Sounds strange, doesn't it? I've seen this problem time and again while experimenting with the RAM hooks or incorrectly modifying a running *.CO* program. Don't worry, this is not a random occurrence. Although you may seldom learn the reason for the lockup, you can be sure you caused it. Perhaps you were using a corrupt program, for example. So after the cold start, you reload a perfect version of that program into RAM, and everything runs fine.

If "running fine" after a cold start isn't good enough—and it wasn't for me—then an explanation of the power-on sequence may shed some light on the matter. The cause of the lockup certainly varies from user to user, but the mysterious bank #1 cold start is no mystery at all.

Regardless of which bank is currently active, whenever the Tandy 200 is powered on, it jumps into RAM bank #1. Location *EEF5H* (hexadecimal) in bank #1 stores the number of the currently active bank. This location in bank #1 is updated whenever you switch banks, so at power-on, the Tandy 200 knows exactly which bank you were using. Unfortunately, at power-on, the Tandy 200 looks for keyboard input, and if *CTRL/BREAK* is recognized, it initiates an immediate cold start. That is the reason for the unexpected bank #1 cold start when attempting to recover from a lockup in another bank. This cold start also resets the byte at *EEF5H* so you remain in bank #1,

```

36 IFLC(SQ(I)+1+(TY(I)+1)MOD2)=1THENRETU
RN
37 IFTY(I)<3THENSF=1:RETURN
38 IFLC(SQ(I)+TY(I)+3)=0THENSF=1
39 RETURN
40 IFLC(SQ(I)+((TY(I)<3)+2)*5)=1THENRETU
RN
41 IFTY(I)MOD2=1THENSF=1:RETURN
42 IFLC(SQ(I)+1+((TY(I)<3)+2)*5)=0THENSF
=1
43 RETURN
44 C=0
45 X=SQ(I)MOD5:Y=INT(SQ(I)/5):LINE(X*48,
Y*32)-((X*48+XX(TY(I))),Y*32+YY(TY(I))),
C,B
46 PRINT@41+Y*160+X*8,RV$CHR$(I+48)CHR$(
27)"q";:IFC=0THENPRINTCHR$(8)+
47 C=1:RETURN:DATA 5,4,15,2,17,2,19,1,14
,1:DATA 9,1,4,1,7,3,2,2,0,2:DATA 46,30,9
4,30,46,62,94,62
48 DATA 52,29,51,30,50,28,55,31,56,31,54
,29,53,30,56,28,55,30,30,52,29,31,51,29,
29,56,31,54,31,28,55,28
49 DATA 51,30,30,52,30,30,56,29,50,29,54
,31,31,53,31,31,55,28,52,28,30,56,30,50,
30,49,28,28,48,31,57,31,51,29,29,52,29
50 DATA 29,56,30,57,28,28,48,30,49,29,29
,54,29,29,53,31,29,55,31,31,57,28,56,28,
52,28,31,51,28,28,48,30,49,30,54
51 DATA 29,29,53,29,29,50,31,49,28,28,54
,30,53,30,50,29,29,49,31,52,31,28,51,31,
31,48,28,54,30,30,53,29,30,51
52 DATA 29,29,48,31,56,29,29,57,30,52,30
,28,48,28,51,28,30,50,30,49,29,29,48,31,
51,28,28,53,28,54,31,56,29,57,29,52
53 DATA 30,51,28,48,30,49,28,28,50,31,54
,31,53,31,56,31,57,29,29,48,30,53,28,28,
54,28,28,50,30,49,29,29,53,31,29,55,29
54 DATA 51,31,31,52,31,31,48,28,54,30,30
,53,30,30,55,29,52,29,31,48,31
55 IFINKEY$="" THEN55ELSEMENU

```

End of listing.

leaving the problem in the other bank unresolved.

On the other hand, if you don't hold down *CTRL/BREAK*, the power-on sequence does a warm start in bank #1, which looks at *EEF5H* and then warm starts the active bank. The warm start sequence also looks for *CTRL/BREAK*, but now you are in the active bank. If you hold down *CTRL/BREAK* during a warm start, a cold start is initiated in the active bank. (*CTRL/BREAK* only has this effect during cold or warm starts, so there is no problem should you inadvertently press this key combination at any other time.)

Pressing *F1* or *TAB* at the menu will switch the computer into the next bank and initiate a warm start, so it is no surprise that pressing *CTRL/BREAK* while switching into any bank will cold start that bank.

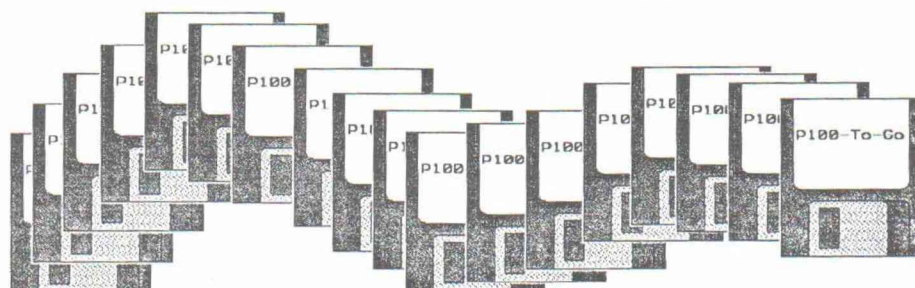
Getting back to the original problem, how can you avoid having to cold start *two* banks, when only one bank is corrupt? That's a tough one! My personal solution is to use banks #2 and #3 for storage of programs and data, and use bank #1 to actually *RUN* the programs. Now if I get a lockup and it becomes necessary to cold start, I lose only what is in bank #1.



# FINGERS TIRED?

*Accomplish more... in less time.*

*Get the P100-To-Go monthly program disk.*



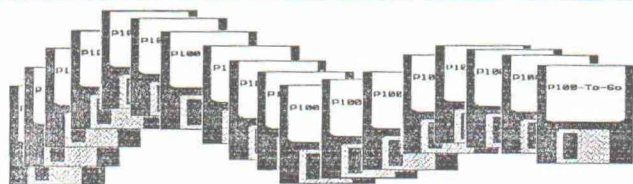
**Make your life easier!** Save hours of time from typing in lengthy programs. Never worry again about typing errors. Have more fun with *Portable 100's* new disk-of-the-month service. Every program from the magazine is included on each month's disk. No typing. No trouble.

**We make it easy and inexpensive.** You deserve value. At *Portable 100* we believe in value. That's why we're not only making each month's programs available on 100K Tandy Portable Disk Drive disks, we're also making sure any extra room on each disk is packed with interesting and fun bonus programs. All files are in .DO format. Ready to load. Ready to go.

## Not just for the Tandy 100.

The *P100-To-Go* disks will work with any computer that uses the Tandy Portable Disk Drive, the Brother FB100, and the Purple Computing Portable Disk Drive. This means your NEC-8201/8300, Tandy 100/102, Tandy 200, Olivetti M10, and Kyotronic KC-85 can all load these programs into memory (once loaded, changes for specific computer models may be required, refer to corresponding program article for information about compatibility with particular computers).

**Subscribe and save!** You can order *P100-To-Go* disks individually at only \$9.95, but for maximum savings sign up for our **Six-pack Special**, one disk each month for six months, six disks, for only \$47.70. Save over 30%, a savings of \$2.00 per disk.



☐ **Yes!** Save me hours of typing time. Sign me up for your **Six-pack Special** (6 monthly disks of the *Portable 100* programs, plus the special bonus programs included with every disk) for only \$47.70.

- ☐ *P100-To-Go* 1988 disk set (Jun.-Dec. 1988) \$47.70.
- ☐ January '89 single issue *P100-To-Go* disk, \$9.95.
- ☐ February '89 single issue *P100-To-Go* disk, \$9.95.
- ☐ March '89 single issue *P100-To-Go* disk, \$9.95.

*To place your order immediately, call:*  
**603-924-9455**

Prices include postage and handling. Please allow 4-6 weeks for delivery. Foreign airmail add \$2 per disk. All foreign, US Funds drawn on US banks only.

- ☐ Payment enclosed (check or money order)
- ☐ Mastercard    ☐ VISA    ☐ Amex

CARD NUMBER

EXP. DATE

SIGNATURE

NAME

STREET ADDRESS

CITY

STATE

ZIP

Mail to: *Portable 100, P100-To-Go*,  
P.O. Box 428, Peterborough, NH 03458-0428

Chips-To-Go: Chipmunk owners—Club 100 will convert your P100-To-Go disk to Chipmunk format. Send your original P100-To-Go disk, with \$5.00 plus First Class return postage, to Club 100, Chips-To-Go, P.O. Box 23438, Pleasant Hill, CA 94523.



## ALIENS STOLE MY 102!



Mojave Desert, June 15, 1988—I was on my way, in a rented Ford Mustang, to another conference on adolescent substance abuse; my acne was acting up and my hangover was killing me. The road ahead was desolate. Suddenly I saw a bright flash...

I awoke in a harshly lit, white room, feeling as though someone had done a cold start on my brain. I sat up and immediately felt worse. I grabbed my 102 carrying case, stood up, and looked at the door. It had no handle. I sat down to wait. With nothing better to do, I reached for my computer.

But my trusty old 40-column Tandy was gone! In its place was a machine so sleek and light that I could hardly believe it. It was a Z88. Where had it come from? Who made it? It had a built-in word processor, spreadsheet, database, diary, calculator, and a bunch of other programs all in ROM. It had pop-up menus and had been expanded to 1.5 megs of RAM! The keyboard made no noise when I typed, and the 8-line screen was 102 characters across! What a machine, and God, was it fast!

As I sat spellbound by this incredible machine, the door behind me opened. An alien walked in.

As if reading my mind, it spoke. "You want to know why you are here." I nodded.

He continued in a perfect imitation of Saturday Night Live's Don Pardo, "We have come to Earth to market this small but powerful computer, and we need your help. I am authorized to offer you a planet-wide dealership for the Z88."

"Great!" I said. "Where do I sign?"

Another blinding flash and he was gone. I was back in my car driving along that deserted road, with the Z88, a ONE YEAR warranty, a dealership agreement, and an 800 number for some star in the Horse Head Nebula...

I've got to talk to someone about this. If you've ever been abducted by alien computer entrepreneurs or want to learn more about an out-of-this-world portable computer, call me, Jonathan Pazer, at (914)496-5199 or (914)639-9228.

*Special Cosmic Discount Package: Z88 CPU w/160K RAM & PCLink \$649, Z88-to-Mac \$770 (cables & software included with both)*

**Zero-G Computers, Inc.**

**914-639-9228**

**48 Maple Lane, Blauvelt, NY 10913**

## CUSTOM 200

### IPL PROGRAMS

A neat feature of the Tandy 200 is its ability to set IPL (Initial Program Loader) to run a program automatically at power-on time. The command `IPL "filename"` designates the file to execute (e.g., `IPL "SETUP.BA"`). You can either type the command at BASIC's `Ok` prompt or include it within a BASIC program. Any type of RAM file will execute, but you must remember to include the extension (`.BA`, `.DO`, or `.CO`) in the command. To clear the IPL, so the program will no longer execute on power-up, simply type (or program) the `IPL` command with a null filename (i.e., `IPL ""`).

Execution of the IPL takes place during a warm start, so if you bank switch the Tandy 200, you execute the IPL in the new bank (assuming it had been set). You can also warm start a RAM bank from BASIC with `CALL 0`. (Be careful not to press `CTRL/BREAK` or you will cold start that bank and wipe out all files.)

I wanted to discuss IPL because it's part of the warm start procedure. The significant, but once again undocumented, aspect of IPL is that before the Tandy 200 executes IPL, it scans the keyboard for the `SHIFT` key. If you hold `SHIFT` down, then the IPL is bypassed. This is useful when switching into a RAM bank that has IPL set but unwanted at the moment.

If you have found a way to use the IPL feature, as in program chaining (discussed in detail in *Portable 100*, June '88), then knowing how to bypass this feature might be of equal importance.

Incidentally, `IPL CHR$(13) + CHR$(0)` makes the computer run the unsaved BASIC program (if one exists) as the IPL program. If no unsaved BASIC program exists, the computer enters BASIC and goes straight to the `Ok` prompt, never displaying the Microsoft logo. I haven't found a practical application for this; it's just an interesting discovery.

### USING MSPLAN WHEN HIMEM <> MAXRAM

Have you ever tried to enter `MSPLAN`, only to get the `MP work area in use` message and a quick return to the menu? You attempt to solve this mystery by referencing the *Tandy 200 Owner's Manual*, but you cannot find any information relating to this problem. The Tandy 200 also comes with the *Tandy 200 Multiplan Manual*, so you may have a momentary feeling of relief, until you discover that the *Multiplan Manual* does not discuss this problem either!

To enter `MSPLAN` successfully, you must set `HIMEM` equal to `MAXRAM`. You do this by entering BASIC and typing

`CLEAR 256, MAXRAM`. `MAXRAM` is normally set to 61104, although a few software packages alter `MAXRAM`. For this discussion, let's assume that `MAXRAM` defaults to 61104.

Suppose you attempt to enter `MSPLAN` using the above `CLEAR` statement to set `HIMEM` equal to `MAXRAM` and you get the *Insufficient free space* message. This occurs whenever you have fewer than 4,213 bytes of free RAM.

Not only do you need the minimum 4,213 bytes free to enter `MSPLAN`, but you need additional free bytes for the `MSPLAN` file you are about to create. If the file already exists and is on the menu, then at least 4,213 bytes must be free in order to enter this file. These RAM requirements are not mentioned in the Tandy manuals.

When `MSPLAN` is being used, it requires an area of RAM for miscellaneous calculations. This "scratchpad" area is from address 59638 to 61103, so if you have set `HIMEM` lower than this area, say, to run a `.CO` program, `MSPLAN` respects this protected area and will not run until you unprotect it and reset `HIMEM` to equal `MAXRAM`.

However, you can make `MSPLAN` work with `HIMEM` set lower than `MAXRAM` if you meet two conditions: First, `HIMEM` must be less than 59638. And second, memory locations 61102 and 61103 must contain the ASCII values for `M` and `P`.

This information will be of significant value to machine language programmers. If you've written a program that requires `HIMEM` to be set below 59638, you can allow the user to access both `MSPLAN` and your program without having to alter `HIMEM` by simply storing the ASCII `MP` at 61102 and 61103.

This is a safe technique if your machine language program resides on the menu and is loaded into the `HIMEM` area with each use. If your program is loaded into `HIMEM` and then accessed by other programs, then you would *not* insert `MP` at 61102 and 61103 (to ensure that `MSPLAN` will not overwrite your machine language code).

And if you haven't guessed by now, Tandy has not documented any of this information, either. But I thought you would like to know.

by Paul Globman

Paul can be reached by modem on CompuServe (72227,1661) and GENIE (P.GLOMBAN). Or by mail at 9406 N.W. 48th St., Sunrise, FL 33351 (please enclose SASE if you're requesting a reply).



# The Portable 100 Classifieds

## SERVICES

**MODEL 600.** Programs/Newsletter. Send S.A.S.E. for information. Easy Ware Products; P.O. Box 218778; Houston, TX 77218-8778

## SOFTWARE

**TRANSFER.COM** MS-DOS/Tandy Laptop \$9.95 plus \$1.00 shipping and handling (Min. \$18 for MC or VISA orders; Calif. residents add 6.5% tax).

Easily transfers .DO files both ways between MS-DOS computers and your Model 100, 102, or 200 laptop. MS-DOS formatted 5.25-inch disk contains the transfer program, complete documentation and sev-

eral unique files, including laptop programs not found anywhere. Write to: Hanson-McBride Services, 984 Hawthorne Drive, Walnut Creek, CA 94596. Order phone number (415)939-5285. 3/89

**BY Teachers for Teachers:** "Grade Management System" Personalized... Stay organized. You set up to: 12 grade values-9classes-50 students. 3.5-inch disk for PDD. Tandy 100/102, 200. We also customize 5 BASIC programs. \$49.00+\$2.00 (S&H). Software by Steffens', 1731 William Ct., Little Chute, WI 54140.

**ENCRYPTION SOFTWARE.** Highest security. Stronger than DES. Tandy 100 and compatibles. D. Vogel, 808 Post, #915, San Francisco 94109.

## HARDWARE

**TANDY 600 MEMORY-\$129.** We make the 96K memory expansion boards that fit inside your Tandy 600 Portable. You can expand your 600 yourself to 224K with 2 boards. Complete installation instructions, 90 day warranty, and 30 day money back guarantee. We also make memory for the Model 100 & Tandy 200. Visa, M/C. Purple Computing. Call (503)479-8087. 3/89

**"DATAMITE"** analog to digital converter for Tandy laptops. Compact, single channel unit connects to cassette jack. High resolution, 0.04% accuracy. \$45.00 Companion chart-recorder software. \$20.00. Jones Service & Design; 1842 S. Nugent Rd; Lummi I., WA 98262. (206) 758-7258. Visa/Mstred. 3/89

## HOW TO PLACE A CLASSIFIED AD

Categorize your advertisement (Hardware, Software, Services, Wanted, Etc.) and carefully type your message. We are not responsible for correctly interpreting handwritten advertisements. Phone numbers, street numbers, dimensions, and any abbreviations count as one word. Logos, company or product, are not allowed, neither are display advertisements. Business rates are \$1.60 per word; non-business rates (individuals advertising) are \$1.30 per word. Add up the cost and send the advertisement copy with a check, money order, Visa, or Mastercard number to: Portable 100 Classifieds, 145 Grove St. Ext., P.O. Box 428, Peterborough, NH 03458-0428, c/o Linda Tieman. Make checks payable to Portable 100 Classifieds. Include your complete return address and phone number (phone number is printed only if it is included in the advertisement itself). Materials due the 1st of the month, two months prior to the magazine cover date (example: materials for the February issue must be received by December 1st.) Advertisements received after the deadline will appear in the next scheduled issue. Payment must accompany order. No refunds for advertisements that miss deadlines, regardless of reason. We reserve the right to change advertisement categories, and to reject, edit, or cancel any advertisement we deem improper. There are no agency discounts for classifieds. **For faster service call 603-924-7949.**


Ad Category \_\_\_\_\_ No. of words x (1.60)(1.30) \_\_\_\_\_ #Issues to run \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Total Enclosed x (Ad Cost x Issues) \_\_\_\_\_ Phone Number \_\_\_\_\_

Visa/Mastercard Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

**Tandy Disk Video Interface \$200.** Zenith Amber B/W monitor 12" \$100. (203) 379-7864 3/89

**Model 102 with SuperROM,** Tandy Drive 1, 3-32K RAMpacks, printer and modem cables, cassette and cable. \$600. Call Doug Nelson at (w) (617) 577-1717 or (h) (617) 876-3117 3/89

**Model 200 w/disk drive (PDD-2),** Extra 29K bank, manuals-- \$600 or best offer. (916) 722-9786 3/89

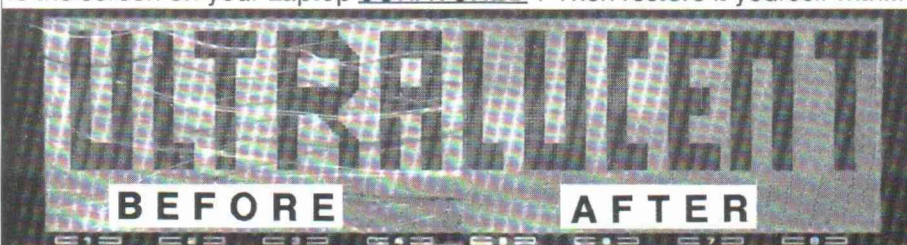
**M100 (32K), PDD-1, CCR-82** cassette, power supplies, modem cable, TS-DOS, 10 programs, P100/PICO collection. All like new. Original boxes. \$650 or best offer. (407) 479-4995. 3/89

## WANTED

**WANTED: CGP-115 Plotter** for Model 100. Will Pay \$200 in good condition. Call Alice Ann at (407) 425-1001. 6/89



Is the screen on your Laptop **SCRATCHED**? Then restore it yourself with...



ULTRALUCENT is a scientifically engineered set of cushioned abrasives that will restore the hard plastic display of any laptop or notebook computer back to "just-out-of-the-box" BRAND-NEW condition. ULTRALUCENT will remove haziness, hairline scratches, minor scratches and deep scratches. "Screen restoration takes just minutes, but the benefits can be seen immediately and are long lasting. And it is so easy to use too!" ... Larry Turner, Photographer, Montreal

ULTRALUCENT is unconditionally & fully guaranteed for 100% satisfaction or your money back! Here's what you get:

- 6 cloth-backed, color coded, re-usable cushioned abrasive pads
- Application foam block
- Anti-Static Finishing Cream for removal of abraded particles
- Wiping towel and complete instructions

All this for only \$19.95 + \$3.00 Shipping & Handling. To order (VISA, MC, CHECK or COD), phone or write:  
ULTRASOFT INNOVATIONS INC. 76 Main Street, P.O. Box 247, Champlain, NY 12919 Tel. (514) 487-9293 (9-5 EST)  
DEALER INQUIRIES WELCOME! Laptops with soft plastic displays can use our ULTRALUCENT EL (\$14.95 + S. & H.)

Circle 37 on reader service card.

## NEW TANDY 1400LT PRODUCTS

- ☆ 20 MB INTERNAL HARD DRIVE
- ☆ 5.25" EXTERNAL FLOPPY DRIVE
- ☆ NUMERIC KEYPAD
- ☆ INTERNAL 2400 BAUD MODEM

EXTERNAL DRIVES FOR ZENITH, TOSHIBA, NEC,  
SHARP, & DATAVUE ALSO AVAILABLE

FOR INFORMATION CALL

## COMPUTER OPTIONS UNLIMITED

**201-469-7678**

Fast, dependable service  
Open 7 days 9am-10pm EST  
World Wide Sales

Circle 148 on reader service card.

## WATCH THIS SPACE!

All our readers do.

One-sixth-page ads get noticed.

And at \$246.50 each (12x insertion rate, with 15% camera-ready discount) they're a real bargain for anyone.

For more information, write to Terry Kepner, Advertising Dept., Portable 100, P.O. Box 428, Peterborough, NH 03458, or better yet, and for faster service, call (603) 924-9455.

## ADVERTISER'S INDEX

### Free Information

For free information on products advertised in this issue of Portable 100, locate the Reader Service number corresponding to the advertisement that interests you. Circle the number on the Reader Service Card at page 25 (or on the wrapper protecting the magazine if you are a subscriber) and drop it into the mail. The literature you've requested will be forwarded to you without any obligation. Please allow 3-5 weeks for delivery.

### ADVERTISERS

RS#		Page
148	Computer Options Unlimited	36
29	Granite Street Portables	28
30	Granite Street Portables	30
111	King Computer Services	23
121	Marymac Industries	5
90	PC LapTop Computers	CII
66	PCSG	CIII
130	The Programmer's Guild	17
88	Rural Engineering	10
20	Shreve Systems	11
126	Software Versand	27
40	Traveling Software	18,19
140	Tony Anderson	16
**	Ultrasoft Innovations	25
37	Ultrasoft Innovations	36
191	Zero-G Computers	30

\*\* Please Contact this advertiser directly.

### NEW PRODUCTS

RS#	Manufacturers	Page
72	Granite Street Portables	22
73	Granite Street Portables	22
65	Software Versand	22
74	Targus, Inc.	22

**Don't forget  
to say  
you saw it in  
Portable 100!**



## SUPER ROM

Lucid Spreadsheet Write ROM Database Outliner



# NOW YOU CAN REALLY HAVE IT ALL!

**All on one ROM. Truly the finest four programs available for the Model 100 — guaranteed. Try it for 30 days. If you aren't blown away by the excellence return it for a full refund.**

# \$199<sup>95</sup>

The four best programs for the Model 100 all on one ROM. 32K of power without using any RAM for program storage. This is the PCSG Snap-In ROM that just presses easily into the little ROM socket in the compartment on the back. You access the four right from the main menu like built-ins.

**Write ROM** — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit ... sur-

passed our highest expectations for quality and clarity."

**Lucid Spreadsheet:** This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

**Database:** This is a relational database like no other. You can do everything from mailing lists to invoices. No complicated pseudo-coding, you create input screens as simply as typing into TEXT. You are not limited by size; you can have as large an input screen as you wish. Prints out reports or forms, getting information from as many files as

you like. Complete math between fields. Total interface with Lucid worksheets.

**Outliner:** Does everything that Think-tank does on a PC but a whole lot better. Includes a Sort for your headlines. Lets you have headlines of up to 240 characters. Has cloning, hoisting and sideways scroll up to 250 characters. Like Lucid, this one sets a new standard for outliners. This is the way to plan and organize your projects.

Present Lucid and Write ROM owners can upgrade for \$150. If you have both it's \$125.

As usual PCSG sells the Super ROM on a thirty day guarantee. If for any reason you are not satisfied, simply return it for a full refund.

We are excited about this product. Super ROM gives the Model 100 the true power of a desktop. No other multi-program ROM has software that compares. But don't take our word for it. We invite you to make that comparison yourself. Priced at \$199.95 on Snap-In ROM.

*Got stuck with somebody else's multi-ROM? We'll upgrade it for \$150.*

**(214) 404-4030**

# PORTABLE COMPUTER SUPPORT GROUP

4540 Beltway Drive, Dallas, TX 75244 • 1(214) 404-4030 • 1-800-544-4699

© PCSG

MC, Visa, American Express, Check, or C.O.D.

Circle 66 on reader service card.



# The sky's the limit... ...with Portable 100 magazine.

On the road . . . at home  
. . . in the office. . . in the  
air. . . the variety of tasks  
you can perform with  
your Tandy portable is  
expanding constantly.

To keep fully informed  
and up-to-date about cur-  
rent trends, new products,  
and new uses for your  
laptop, you need **Portable  
100** magazine.

From sophisticated input/  
output (I/O) calls and  
their applications, to sim-  
ple disk drives, **Portable  
100** magazine covers it all.

**Portable 100** gives you  
features, news, columns,  
and reviews that are  
thorough and timely.  
And they are written in a  
fast-paced, easy-to-read  
style, by leading experts  
in the computer field.

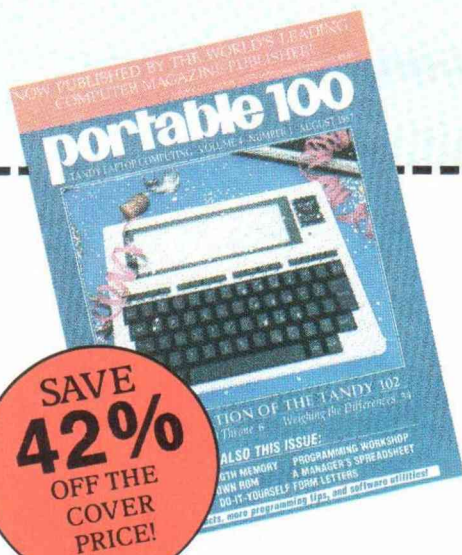
In upcoming issues you  
will discover. . .

- how new peripherals  
can make you more  
productive.
- more efficient ways  
to communicate with  
your desktop.
- where to buy low-cost  
public-domain  
software.
- how your business  
can be more profitable  
with your portable at  
your fingertips.
- where to find the best  
bulletin boards and  
information services.
- and much more!

Don't miss even a single  
valuable monthly issue.  
Fill out the coupon below,  
or to charge it to your  
credit card, call

## 1-603-924-9455

*Portable 100, the magazine  
for Tandy 100, 102, 200, 600  
and 1400LT users*



☐ **YES!** I want to be more productive with my Tandy portable... and save 42% off the newsstand price. Send me a year's subscription (monthly except for a combined July/August issue) of Portable 100

☐ Payment enclosed ☐ M.C. ☐ Visa ☐ Bill me  
Make check or money order payable to **Portable 100**

Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

I have a Tandy ☐ 100 ☐ 102 ☐ 200 ☐ 600 ☐ 1400LT  
or an ☐ NEC8201/8300 ☐ Olivetti M10 ☐ KC-85  
Canada and Mexico, US\$29.97, Foreign surface, US\$44.97  
Foreign Air Mail add US\$50. All foreign, except Canada, US Funds drawn on US bank. P892

### **MONEY BACK GUARANTEE:**

If you are not completely  
satisfied with Portable 100, you  
may cancel your subscription  
and receive a refund on the  
remaining unmailed issues.  
Please allow 6-8 weeks for de-  
livery of your first issue.